

# **ADVANCE EPHEMERIS**

OF

PLANETS' POSITIONS

FOR

ONE HUNDRED YEARS

FROM 1951 TO 2050 A. D.

*Second Edition*

*By*

N. C. LAHIRI, M. A.

**ASTRO-RESEARCH BUREAU**

**Calcutta-6**

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## PREFACE

The first edition of the book having gone out of print in a short time, it became necessary to bring out the second edition. While going through the reprinting work, advantage has been taken of correcting the errors of the first edition some of which were communicated by our kind readers. Some suggestions were also received for improvement of the book and clarification or expansion of some items which have been given effect to in this edition as far as possible. In course of giving greater consideration to the scope of such a publication, it became imperative to prepare some new tables of interest and include them in this edition. Of such items mention may be made of the conjunction of planets with Sun, latitude calculation of inferior planets, list of coming *malamasas* and *kshayamasas* etc. The detailed method of calculation of the ending moment of tithi, nakshatra and yoga directly or by using the logarithmic tables is also a long needed addition. Some items of minor importance have however been omitted. An appendix has been included giving in short the basis of calculation and also showing how the present tables can be made use of in finding the planets' places for any year during the period from 500 years back to 500 years forward without much difficulty. This has rendered the present publication for 100 years to serve the purpose of thousand years' ephemeris.

Unlike the first edition, many examples almost on every intricate calculation have been given in this edition mainly to help the new entrants into the subject. Many students are in need of the values of different terms of the lunar equation by which the mean moon is corrected to get the true moon. For their facility the principal terms of the equation down to that of 2' magnitude have been given in the appendix. The author will deem his labours rewarded if the materials provided and subjects dealt with in the book are found useful by the readers and also if these can infuse in them a spirit of further work in the line.

We cannot avoid mentioning at the end that the present high price of paper and increasing cost of printing etc., combined with an increase in the volume of the book have compelled us to raise the price of this revised edition.

Calcutta  
20 February, 1972  
( 1 Phalgun, 1993 S.E. )

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N. C. LAHIRI

## PREFACE TO THE FIRST EDITION

Those who are interested in planetary positions very often want to know the positions of a particular planet or of all the planets on some future dates for which ephemerides are not available at that time. For this purpose very precise values of longitudes are however not necessary. In order to meet this end, the present endeavour has been made to furnish the longitudes of all the planets, both ancient and modern planets, for the period of one hundred years from 1951 to 2050 A.D. The longitudes given or derivable from this book are *Nirayana* i.e. according to the Indian system, but are calculated on the basis of modern astronomy and are given in *Rāśis* (nirayana signs), degrees and minutes or decimals of a degree. When the figure for *rasi* is zero, the planet is in *Mēṣa* and so on. The *Sayana* or tropical longitude may as usual be obtained by adding *ayanamsa* to the nirayana longitude.

The longitude of Sun has been calculated from the author's *Tables of the Sun* and the given figures are correct to a minute. For the Moon the true longitude is to be derived from the mean longitude by applying a few corrections based on anomaly and tithi and the result would be obtained correct within 12 minutes of arc. Here Anomaly is mean moon *minus* lunar perigee, and Tithi is mean moon *minus* mean sun. The positions of the inferior planets Mercury and Venus, which are to be obtained from the true longitude of the Sun for the day by applying the elongation derived from the 'Days from conjunction with Sun', are correct within a degree. The longitudes of other planets are correct within a fraction of a degree.

A new table on *Sāvāna* Calendar has been given in this book in order to facilitate fixing the date of ending of a *dasā* period which is based on the *Sāvāna* year of 360 days. This table would also serve the purpose of determining the number of civil days since the beginning of the *Kaliyuga*. A note on Indian Calendars has been given at the beginning of the book to help finding the corresponding dates of any of the regional calendars of India calculated on modern methods.

As the calculation involved in the preparation of such a book is enormous, the work which was started in 1959 could not be completed much earlier. The author would consider his labours amply rewarded if the readers can derive some benefit from this book.

17, Brindaban Mullick 1st Lane  
Calcutta-9  
1st January, 1968

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N. C. LAHIRI

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# SYMBOLS

☉	Sun	<i>Ravi, Surya</i>	♈	Aries	0 <i>Meṣa</i>
☾	Moon	<i>Chandra</i>	♉	Taurus	1 <i>Vṛṣa</i>
☿	Mercury	<i>Budha</i>	♊	Gemini	2 <i>Mithuna</i>
♀	Venus	<i>Śukra, Bhṛgu</i>	♋	Cancer	3 <i>Karkaṭa</i>
♂	Mars	<i>Maṅgala, Kuja</i>	♌	Leo	4 <i>Siṃha</i>
♃	Jupiter	<i>Brhaspati, Guru</i>	♍	Virgo	5 <i>Kanyā</i>
♄	Saturn	<i>Śani</i>	♎	Libra	6 <i>Tulā</i>
♅	Uranus	<i>Indra, Prajāpati</i> or Herschel	♏	Scorpio	7 <i>Vṛścika</i>
♆	Neptune	<i>Varuṇa</i>	♐	Sagittarius	8 <i>Dhanus</i>
♇	Pluto	<i>Rudra, Yama</i>	♑	Capricornus	9 <i>Makara</i>
♈	Ascending Node or Dragon's head	<i>Rāhu</i>	♒	Aquarius	10 <i>Kumbha</i>
♉	D. Node, Dragon's tail	<i>Ketu</i>	♓	Pisces	11 <i>Mina</i>
♁	Earth	<i>Prthivī</i>			

# ERRATA

Page		For	Read
22	Mean Moon, 1933, May 0	<sup>5</sup> 2 27 6	<sup>5</sup> 3 27 6
62	Tab. VIII, For Anomaly—		
	Arg. 6	12 2'	12 23
	7	12 0	12 05
84	1951, Mesha	d h Apr. 14 3·2	d h 14 3·9
88	1951, Time	Dec. 18 15·8	28 15·8

# INTRODUCTION

## INDIAN CALENDAR

The calendar used in this book is the English or the Gregorian calendar. When the year (A.D.) of this calendar is divisible by 4, it becomes a leap-year and then February gets 29 days. But the century years 1700, 1800, 1900, 2100 A.D. etc. are not leap-years, while 1600, 2000, 2400 A.D. which are divisible by 400 are leap-years.

## THE NATIONAL CALENDAR

In the National Calendar of India, the Saka era is used. When the Saka year divided by 4 leaves a remainder of 2 it becomes a leap year, and then Chaitra the first month of the year gets 31 days instead of its normal duration of 30 days. The year begins on Mar. 22 in a common year and on Mar. 21 in a leap-year.

Saka year + 78 = A.D. year ( Mar. to Dec. )

Saka year + 79 = A.D. year ( Jan. to Mar. )

The subsequent months of this calendar have got fixed number of days and they also begin on fixed dates of the English calendar as stated below : Vaisakha (31) begins on Apr. 21, Jyaistha (31) on May 22, Asadha (31) on June 22, Sravana (31) on July 23, Bhadra (31) on Aug. 23, Asvina (30) on Sept. 23, Kartika (30) on Oct. 23, Agrabayana (30) on Nov. 22, Pausa (30) on Dec. 22, Magha (30) on Jan. 21 and Phalguna (30) on Feb. 20.

## OTHER SOLAR CALENDARS

The year of the Bengali calendar (Bengali San or B.S.) begins on April 14-15 and the first month is Vaisakha.

Bengali year + 593 = A.D. year ( Apr. to Dec. )

Bengali year + 594 = A.D. year ( Jan. to Apr. )

The months of this calendar, like all other indigenous calendars, have got variable number of days and the beginning dates of months also vary from year to year as shown below : Vaisakha (30-31) begins on Apr. 14-15, Jyaistha (31-32) on May 15-16, Asadha (31-32) on June 15-16, Sravana (31-32) on July 17-18, Bhadra (31+) on Aug. 17-18, Asvina (30-31) on Sept. 17-18, Kartika (30-) on Oct. 17-18, Agrabayana (29-30) on Nov. 16-17, Pausa (29-30) on Dec. 16-17, Magha (29-30) on Jan. 14-15, Phalguna (29-30) on Feb. 13-14, and Chaitra (30-31) on Mar. 15-16. The calendar of Assam is the same as that of Bengal. The Saka era used with the Bengali calendar starts from solar Vaisakha.

## INTRODUCTION

The year of the regional calendar of Kerala begins on August 16- and the first month is Simha corresponding to the above mentioned month of Bhadra. The era used is Kollam era.

Kollam era + 824 = A.D. year ( Aug. to Dec. )

Kollam era + 825 = A.D. year ( Jan. to Aug. )

The lengths of months of this calendar are of the same order as the Bengali calendar but the months begin generally one day earlier sometimes on the same day.

Similarly the years of the Tamilian calendar, Oriya calendar and the Punjabi solar calendar begin on April 13-14, corresponding to Vaisak of the Bengali calendar or Mesham of the Keralian. The twelve months of the Tamilian calendar are Chittirai, Vaikasi, Ani, Adi, Avani, Purattasi, Arppisi, Karthigai, Margali, Thai, Masi and Panguni corresponding to Vaisakha to Chaitra of the Bengali calendar. The names of months of the Keralian calendar are the same as of the Indian *Rasis* (or signs) starting from Simha. The months of all these calendars are also almost of the same length as those of the Bengali calendar. The months of the Tamilian calendar begin one day earlier or sometimes on the same day while those of the Oriya and Punjabi calendars begin one or two days earlier than the months of the Bengali calendar.

The Jovian year or the Bārhaspatya Varsha of South India, commencing from Prabhava which are 60 in number, is used as the era with the Tamilian calendar, the year of which begins on April 13-14. The Jovian year is also used with the Telugu calendar and the Mysore calendar, the months of which are luni-solar and the year begins with Lunar Chaitra after the new-moon day falling between March 14 and April 13-14. The Saka era starting from lunar Chaitra is also used in the era in these areas and also in Maharashtra. The names of the Jovian years from 1927 to 2046 A.D. which begin in March-April according to the South Indian usage are stated below :

Varṣa	yr.	yr.	Varṣa	yr.	yr.	Varṣa	yr.	yr.
1. Prabhava	1927	1987	21. Sarvajit	1947	2007	41. Plavanga	1967	2027
2. Vibhava	28	88	22. Sarvadhārin	48	08	42. Kilaka	68	128
3. Sukla	29	89	23. Virodhin	49	09	43. Saumya	69	129
4. Pramoda	1930	1990	24. Vikrita	1950	2010	44. Sādhārana	1970	2030
5. Prajapati	31	91	25. Khara	51	11	45. Virodhakrit	71	131
6. Angiras	32	92	26. Nandana	52	12	46. Paridhāvin	72	132
7. Srimukha	33	93	27. Vijaya	53	13	47. Pramādin	73	133
8. Bhava	34	94	28. Jaya	54	14	48. Ananda	74	134
9. Yuvan	35	95	29. Manmatha	55	15	49. Rākshasa	75	135
10. Dhātri	36	96	30. Durmukha	56	16	50. Anala (Nala)	76	136
11. Isvara	37	97	31. Hemalamba	57	17	51. Pingala	77	137
12. Bahudhānya	38	98	32. Vilamba	58	18	52. Kālayukta	78	138
13. Pramāthin	39	99	33. Vikārin	59	19	53. Siddharthin	79	139
14. Vikrama	1940	2000	34. Sarvari	1960	2020	54. Raudra	1980	2040
15. Vriṣha	41	01	35. Plava	61	21	55. Durmati	81	141
16. Chitrabhānu	42	02	36. Subhakrit	62	22	56. Dundubhi	82	142
17. Subhānu	43	03	37. Sobhana	63	23	57. Rudhīrodgāri	83	143
18. Tārana	44	04	38. Krodhin	64	24	58. Raktāksha	84	144
19. Pārthiva	45	05	39. Viśvāvasu	65	25	59. Krodhana	85	145
20. Vyaya	1946	2006	40. Parabhava	1966	2026	60. Kshaya	1986	2046

(Akshaya)



## INTRODUCTION

In order to determine the exact date of beginning of the months of the solar calendars of different States, first calculate the time of Samkranti or Nirayana transit of the Sun using the tables given on page 84 for the year in question. When the transit time occurs before midnight the *last day* of the preceding month of the Bengali calendar falls on that day, and when it is after midnight then it falls on the next day; and the new month begins on the day after. In other States the *first day* of the month (and not the last day) is determined according to the transit time. For this purpose the sunset rule is observed in Tamil Nadu, 18-ghatika rule in Kerala and sunrise rule in Orissa and Punjab. When the transit time occurs before the above mentioned epochs for the capital cities of the respective States, then the month begins on that very day, if after then on the next day. In Orissa and Punjab the first day of the month falls on the day of transit (sunrise to next sunrise). The above mentioned critical hours for different States are given below (in I.S.T.) for the dates of different solar transits. It may however be mentioned here that in the Bengali rule some complications arise when the transit occurs within the 2-ghatika period covering midnight.

Rasi and Date		Sunrise (Rhubaneswar)	Sunrise (Delhi)	1 <sup>st</sup> ghatika (Trivandrum)	Sunset (Madras)	Midnight (Calcutta)
		h m	h m	h m	h m	h m
Mesha	Apr. 13-14	5 30	5 58	13 26	18 21	23 37
Vrisha	May 14-15	5 11	5 31	13 16	18 27	23 33
Mithuna	June 14-15	5 06	5 23	13 16	18 36	23 37
Karkata	July 16-17	5 16	5 34	13 23	18 39	23 42
Simha	Aug. 16-17	5 27	5 51	13 27	18 29	23 41
Kanya	Sept. 16-17	5 34	6 07	13 24	18 09	23 31
Tu'la	Oct. 16-17	5 42	6 23	13 22	17 49	23 22
Vrischika	Nov. 15-16	5 57	6 45	13 27	17 39	23 21
Dhanus	Dec. 15-16	6 15	7 07	13 40	17 45	23 32
Makara	Jan. 13-14	6 25	7 16	13 52	18 00	23 45
Kumbha	Feb. 12-13	6 19	7 03	13 54	18 14	23 51
Mina	Mar. 14-15	5 57	6 32	13 42	18 19	23 46

## LUNAR CALENDARS

The solar months like Vaisakha, Jyaishta, etc. actually begin from the moment of Samkranti or solar transit into Nirayana Rasis like Mesha, Vrisha, etc. The lunar months which have also got the same names begin from the moment of new moon (Amavasya) occurring after the above transit time and before the next transit. The day next to Amavasya is the first day of the month. This is according to the new-moon ending or *Sukladi* system or the *Mukhya māna*, as prevalent in Maharashtra, Gujarat, Andhra Pradesh, and Mysore. These months have got two halves, the Sukla Paksha and the Krishna Paksha. When however two new moon ending lunar months begin within a solar month, then the second month is termed as *suddha* or real and the first

## INTRODUCTION

one is *adhika* or *mala*\* of the same name. The era used with these lunar months (except in Gujarat) is the Saka era named there as *Salivahana Saka*, and the year begins with Chaitra sukla pratipad. In Gujarat, however, the Samvat era is used and the year begins there with Kartika sukla pratipad occurring between Oct. 17-18 to Nov. 15-16.

Kartikadi Samvat—57=A.D. year (Oct. to Dec.)

,, Samvat—56=A.D. year (Jan. to Oct.)

In North India also (in all States except Bengal and Assam) the lunar calendar is used, but there the months are full-moon ending i.e. *Krishnadi* or *Gauna* beginning from the day after full-moon (Purnima) about 15 days before the beginning of months of the same name of the above mentioned Sukladi system. Here also the months have got two halves, first Krishna paksha or *Vadi* half and then Sukla paksha or *Sudi* half. The Krishna paksha of the Mukhya mana and the Vadi half of Gaunamanana are related in the following way—Chaitra Krishna is equivalent to Vaisakha Vadi, then comes Vaisakha Sukla corresponding to Vaisakha Sudi, followed by Vaisakha Krishna corresponding to Jyaishta Vadi, and so on. The Vikram Samvat is used with this calendar and the year begins in the middle of the month of Gauna Chaitra i.e. from Chaitra Sukla pratipad occurring between March 15-16 and April 13-14.

Chaitradi Samvat—57=A.D. year (Mar. to Dec.)

,, Samvat—56=A.D. year (Jan. to Mar.)

When the date is given in terms of any of the above mentioned calendars the same may be converted into the corresponding date of the English calendar by the above rules.

## Kaliyuga Era

The Kaliyuga era is measured by the number of years elapsed since 3102 B.C., Feb. 17-18 midnight (Ujjain) when the mean sun of the Surya-Siddhanta became zero. We may therefore take the time of Mean Sun as affected by Bija correction entering Mesha as the beginning moment of the Kaliyuga era. This transit time is given below in I.S.T. for the four basic years.

1951	1952	1953	1954
d h	d h	d h	d h
Apr. 16 1'6	Apr. 15 7'8	Apr. 15 13'9	Apr. 15 20'1

The transit time for other years may be obtained by applying the 'Correction for other years' given on page 84. It may be noted that

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\* A list of *malamāsas* from 1913 to 2026 A.D. has been given on page 92.

## INTRODUCTION

we can also get the above time by adding  $1d\ 21'7''$  to the transit time of True Sun into Mesha as obtained from the table on the same page.

Kaliyuga era - 3101 = A.D. year ( Apr. to Dec. )

Kaliyuga era - 3100 = A.D. year ( Jan. to Apr. )

### Barhaspatya Varsha of North India

In North India also there are 60 Jovian years with the same name as in the South starting from Prabhava as No. 1. But here the years are determined by the entry of Jupiter ( Brihaspati ) by mean motion into different Rasis beginning from Kumbha. The length of the Jovian year of North Indian usage is  $361d\ 1'18''$ , and of the South Indian usage is equal to that of the mean sidereal year i.e.  $365d\ 6'15''$ . The beginning dates of the Jovian years of North India for the years 1950 to 2044 A.D. are given below

Varṣa No.	Begins on	Varṣa No.	Begins on	Varṣa No.	Begins on	Varṣa No.	Begins on
37	1950 Mar. 25	1	1973 Dec. 15	25	1997 Sept. 5	49	2021 May 27
38	51 Mar. 22*	2	74 Dec. 11	26	98 Sept. 1	50	22 May 23
39	52 Mar. 17	3	75 Dec. 7	27	1999 Aug. 28	51	23 May 19
40	53 Mar. 13	4	76 Dec. 2	28	2000 Aug. 23	52	24 May 14
41	54 Mar. 9	5	77 Nov. 26	29	01 Aug. 19	53	25 May 10
42	55 Mar. 5	6	78 Nov. 24	30	02 Aug. 15	54	26 May 6
43	56 Feb. 29	7	79 Nov. 20	31	03 Aug. 11	55	27 May 2
44	57 Feb. 24	8	1980 Nov. 15	32	04 Aug. 6	56	28 Apr. 27
45	58 Feb. 20	9	81 Nov. 11	33	05 Aug. 2	57	29 Apr. 23
46	59 Feb. 16	10	82 Nov. 7	34	06 July 29	58	2030 Apr. 19
47	1960 Feb. 12	11	83 Nov. 3	35	07 July 25	59	31 Apr. 16*
48	1961 Feb. 7	12	1984 Oct. 29	36	2008 July 20	60	2032 Apr. 11
49	1962 Feb. 3	13	1985 Oct. 25	37	2009 July 16	1	2133 Apr. 7
50	63 Jan. 30	14	86 Oct. 21	38	2010 July 12	2	34 Apr. 3
51	64 Jan. 26	15	87 Oct. 17	39	11 July 9*	3	35 Mar. 30
52	65 Jan. 21	16	88 Oct. 12	40	12 July 4	4	36 Mar. 25
53	66 Jan. 17	17	89 Oct. 8	41	13 June 30	5	37 Mar. 21
54	67 Jan. 13	18	1990 Oct. 5*	42	14 June 26	6	38 Mar. 17
55	68 Jan. 9	19	91 Oct. 1	43	15 June 22	7	39 Mar. 13
56	69 Jan. 4	20	92 Sept. 26	44	16 June 17	8	2040 Mar. 8
57	69 Dec. 31	21	93 Sept. 22	45	17 June 13	9	41 Mar. 4
58	1970 Dec. 28*	22	94 Sept. 18	46	18 June 9	10	42 Feb. 28
59	71 Dec. 24	23	95 Sept. 14	47	19 June 5	11	43 Feb. 24
60	1972 Dec. 19	24	1996 Sept. 9	48	2020 May 31	12	2044 Feb. 20

N.B.—(1) The day has been reckoned from 0h (mid-night) I.S.T.

(2) In 86 civil years there are 87 Barhaspatya Varṣas.

(3) Varṣa Nos. 1 Prabhava, 13 Pramathin, 25 Khara, 37 Sobhana and 49 Rāṁshasa begin with the entry of Jupiter into Kumbha by mean motion. Originally the Kumbha Mela used to occur in these years as determined by mean motion, but now the true position of the planet is taken into account.

The time after the date is 0h I.S.T. in these years. Thereafter time increases by  $1'2''$  per year.

### Example

(The results are compared with the longitudes as given in LAHIRI'S *Indian Ephemeris* abbreviated as I.E. )

(A) Find the longitudes of the Sun, Moon and Rahu on the 4th Oct. 1968 at 5-30 A.M. I.S.T.

	True Sun	Mean Moon	Moon's Anomaly	Tithi	Rahu
( Pages 10-11 ) 1968 Oct. 0	5 13 29	8 19 45	2 63	7 863	11 16 1
( P. 54 et seq ) Days 4	3 56	1 22 42	4 36	4 61	- 0 2
	5 17 24	10 12 27	6 99	11 927	11 15 9
	(I.E. 5 17 24)			(I.E. 11 15 9)	

Corrections to Moon (p. 57 et seq.)	Tab. I (Ano.)	+6° 17'
	II (Ti.)	-0 59
Tab. III (2T. - Ano. = 16° 56')	...	-0 29
" IV (Oct. 4)	...	+0 11
" V (Moon - Rahu = 10° 27')	...	+0 6
		+5 26
	Mean Moon	10 12 27
	∴ True Moon	10 17 53
	(I.E. 10 17 56)	

(B) Longitudes of Mercury and Venus on the same day.

	Mercury	Venus
(P. 10) Days from conj. (1968, Oct. 0)	47.3	103.3
Days 4	4.0	4.0
	51.3	107.3
Elongation from Sun (pp. 66-69)	+20.1 *	+28.0
True Sun	5 17.4	5 17.4
∴ True Planet	6 07.5	6 15.4
	(I.E. 6 07.8	6 15.5)

(\* From pages 64 and 65 the correction is obtained as +20° 6 and the true longitude of Mercury is derived as 6s 08° 0 )

(C) Longitude of Mars on the same day of 1968.

Long. of Mars (p. 11) Oct. 0 = 4s 11° 8.	Oct. 15 = 4s 21° 1
∴ Motion in 15 days = +9° 3	
(P. 72) Corrected day = 4.0	∴ Movement for 4 days = +2.5
	Oct. 0 = 4 11.8
	∴ Mars on Oct. 4 = 4 14.3
	(I.E. 4 14.2)

# ADVANCE EPHEMERIS

## FOR HUNDRED YEARS

From 1951 to 2050 A.D.

Saka Era from	1872-73	to	1971-72
Samvat Era	2007-08	„	2106-07
Bengali San	1357-58	„	1456-57
Kollam Era	1126-27	„	1225-26

*Given for 5-30 A.M. Indian Standard Time or 0<sup>h</sup> Greenwich Mean Time (Greenwich midnight).*

The longitudes given are for the zero-date of the month. January 0 means the day before January 1 (i.e. 31 December of the previous year), Feb. 0 is the day before Feb. 1 (i.e. Jan. 31) and so on.

The longitudes of the Sun, Moon and planets are all *Nirayana* or sidereal. To obtain the *Sayana* or tropical longitude, the amount of *Ayanamsa* for the year as given on page 52 is to be added to them. The *ayanamsa* varies from 23° 10' to 24° 33' during the period.

The true longitude of the Sun and of planets (Mars to Pluto) and the mean longitude of the Moon together with that of Rahu (Moon's Node) are given for the zero-date of each month at 5-30 A.M. The longitude of Mars is given twice i.e. for the zero-date as well as for the 15th of the month.

As regards Moon, in addition to its mean longitude, the Mean Anomaly (mean moon-perigee) and the Mean Tithi (mean moon-mean sun) are given. These are in units of 12° and so their period is 30. From tables given at the end, corrections due to anomaly, tithi, etc. are to be taken and applied to the mean moon to get the true longitude of the Moon for the day.

In the case of Mercury and Venus, the number of days elapsed since the last conjunction (conj. of mean planet with the mean sun) are given. Corrections are to be taken against these 'Days from Conjunction' and applied to the true Sun for the day to get the true longitude of these planets.

1951-1954: Sun, Moon

ADVANCE

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1951							
Jan. 0	Sun.	8 15 34	5 7 25	24-27	21-811	53-4	43-4
Feb. 0	Wed.	9 17 7	6 25 53	28-02	23-303	84-4	74-4
Mar. 0	Wed.	10 15 25	7 4 49	28-50	21-748	112-4	102-4
Apr. 0	Sat.	11 16 18	8 23 17	2-25	23-241	27-6	133-4
May 0	Mon.	0 15 40	9 28 33	4-92	23-718	57-6	163-4
June 0	Thur.	1 15 34	9 17 1	8-67	25-211	88-6	194-4
July 0	Sat.	2 14 14	0 22 20	11-33	25-688	2-7	224-4
Aug. 0	Tues.	3 13 49	2 10 48	15-08	27-180	33-7	255-4
Sept. 0	Fri.	4 13 36	3 29 16	18-83	28-673	64-7	286-4
Oct. 0	Sun.	5 12 50	5 4 32	21-50	29-150	94-7	316-4
Nov. 0	Wed.	6 13 34	6 23 0	25-25	0-643	9-8	347-4
Dec. 0	Fri.	7 13 47	7 28 19	27-91	1-120	39-8	377-4
1952							
Jan. 0	Mon.	8 15 18	9 16 47	1-66	2-613	70-8	408-4
Feb. 0	Thur.	9 16 52	11 5 15	5-41	4-105	101-8	439-4
Mar. 0	Fri.	10 16 10	11 27 22	6-98	5-566	14-9	468-4
Apr. 0	Mon.	11 17 2	1 15 50	10-74	5-059	45-9	499-4
May 0	Wed.	0 16 24	2 21 6	13-40	5-536	75-9	529-4
June 0	Sat.	1 16 17	4 9 34	17-75	7-029	106-9	560-4
July 0	Mon.	2 14 57	5 14 53	19-81	7-506	21-0	6-5
Aug. 0	Thur.	3 14 31	7 3 21	23-56	8-998	52-0	37-5
Sept. 0	Sun.	4 14 19	8 21 49	27-31	10-491	83-0	68-5
Oct. 0	Tues.	5 13 34	9 27 5	29-98	10-968	113-0	98-5
Nov. 0	Fri.	6 14 19	9 15 33	3-73	12-461	28-2	129-5
Dec. 0	Sun.	7 14 32	0 20 52	6-39	12-938	58-2	159-5
1953							
Jan. 0	Wed.	8 16 4	2 9 20	10-14	14-430	59-2	190-5
Feb. 0	Sat.	9 17 37	3 27 48	13-89	15-923	4-3	221-5
Mar. 0	Sat.	10 15 54	4 6 44	14-38	14-368	32-3	249-5
Apr. 0	Tues.	11 16 46	5 25 12	18-13	15-861	63-3	280-5
May 0	Thur.	0 16 8	7 0 28	20-79	16-338	93-3	310-5
June 0	Sun.	1 16 2	8 18 57	24-54	17-831	8-4	341-5
July 0	Tues.	2 14 42	9 24 15	27-21	18-308	38-4	371-5
Aug. 0	Fri.	3 14 16	11 12 43	0-96	19-800	69-4	402-5
Sept. 0	Mon.	4 14 4	1 1 11	4-71	21-293	100-4	433-5
Oct. 0	Wed.	5 13 19	2 6 27	7-37	21-770	14-5	463-5
Nov. 0	Sat.	6 14 3	3 24 55	11-12	23-263	45-5	494-5
Dec. 0	Mon.	7 14 16	5 0 14	13-78	23-740	75-5	524-5
1954							
Jan. 0	Thur.	8 15 48	6 18 42	17-54	25-232	106-5	555-5
Feb. 0	Sun.	9 17 21	8 7 10	21-29	26-725	21-7	2-5
Mar. 0	Sun.	10 15 38	8 16 5	21-77	25-170	49-7	30-5
Apr. 0	Wed.	11 16 31	10 4 34	25-52	26-663	80-7	61-5
May 0	Fri.	0 15 53	11 9 52	28-19	27-140	110-7	91-5
June 0	Mon.	1 15 47	0 28 20	1-94	28-633	25-8	122-5
July 0	Wed.	2 14 27	2 3 36	4-60	29-109	55-8	152-5
Aug. 0	Sat.	3 14 2	3 22 4	8-35	0-602	86-8	183-5
Sept. 0	Tues.	4 13 50	5 10 32	12-10	2-095	1-9	214-5
Oct. 0	Thur.	5 13 4	6 15 51	14-76	2-572	31-9	244-5
Nov. 0	Sun.	6 13 48	8 4 19	18-52	4-065	62-9	275-5
Dec. 0	Tues.	7 14 1	9 9 35	21-13	4-542	92-9	305-5
Dec. 31	Fri.	8 15 32	10 28 4	24-93	6-034	8-0	336-5

# EPHEMERIS

Planets: 1951-1954

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1951</b>								
Jan. 0	9 19.1	10 09	10 11.3	5 9.1	2 14.2	5 26.3	3 26.3	10 29.7
Feb. 0	10 13.5	10 25.2	10 17.8	5 8.9	2 13.0	5 26.3	3 25.6	10 28.0
Mar. 0	11 5.4	11 16.9	10 24.3	5 7.4	2 12.3	5 26.0	3 25.0	10 26.5
Apr. 0	11 29.0	0 10.3	11 1.8	5 5.0	2 12.4	5 25.2	3 24.4	10 24.9
May 0	0 21.3	1 2.1	11 8.7	5 3.1	2 13.2	5 24.4	3 24.2	10 23.3
June 0	1 13.4	1 23.9	11 14.8	5 2.4	2 14.6	5 23.8	3 24.5	10 21.7
July 0	2 4.1	2 14.2	11 19.0	5 3.2	2 16.4	5 23.6	3 25.1	10 20.1
Aug. 0	2 24.8	3 4.6	11 21.0	5 5.5	2 18.2	5 23.9	3 25.9	10 18.4
Sept. 0	3 11.9	3 24.4	11 19.8	5 8.7	2 19.7	5 24.6	3 26.9	10 16.8
Oct. 0	4 3.7	4 12.9	11 16.4	5 12.4	2 20.6	5 25.6	3 27.7	10 15.2
Nov. 0	4 22.6	5 1.5	11 12.6	5 16.1	2 20.8	5 26.7	3 28.2	10 13.6
Dec. 0	5 10.1	5 18.5	11 11.1	5 19.2	2 20.1	5 27.7	3 28.4	10 12.0
<b>1952</b>								
Jan. 0	5 27.0	6 4.4	11 12.7	5 21.3	2 18.9	5 28.4	3 28.0	10 10.3
Feb. 0	6 11.7	6 17.5	11 17.0	5 21.8	2 17.6	5 28.5	3 27.4	10 8.7
Mar. 0	6 21.8	6 24.6	11 22.8	5 20.7	2 16.9	5 28.2	3 26.7	10 7.1
Apr. 0	6 25.1	6 22.6	11 29.9	5 18.6	2 16.8	5 27.5	3 26.1	10 5.5
May 0	6 17.8	6 12.5	0 7.1	5 16.4	2 17.5	5 26.6	3 25.9	10 3.9
June 0	6 8.7	6 8.1	0 14.3	5 15.1	2 18.9	5 26.0	3 26.1	10 2.3
July 0	6 10.4	6 15.0	0 20.4	5 15.3	2 20.6	5 25.7	3 26.7	10 0.7
Aug. 0	6 21.8	6 29.5	0 25.2	5 17.0	2 22.5	5 26.0	3 27.6	9 29.0
Sept. 0	7 8.7	7 18.2	0 27.6	5 19.9	2 24.1	5 26.7	3 28.5	9 27.4
Oct. 0	7 28.3	8 8.8	0 27.1	5 23.4	2 25.1	5 27.7	3 29.4	9 25.8
Nov. 9	8 20.5	9 1.7	0 23.8	5 27.1	2 25.3	5 28.9	3 29.9	9 24.2
Dec. 0	3 13.0	9 24.6	0 19.9	6 0.5	2 24.8	5 29.8	4 0.0	9 22.6
<b>1953</b>								
Jan. 0	10 6.9	10 18.4	0 17.8	6 3.0	2 23.6	6 0.5	3 29.7	9 20.9
Feb. 0	11 0.7	11 12.1	0 18.9	6 4.1	2 22.3	6 0.7	3 29.1	9 19.3
Mar. 0	11 21.8	0 2.9	0 22.3	6 3.6	2 21.5	6 0.4	3 28.4	9 17.8
Apr. 0	0 14.6	0 25.4	0 28.0	6 1.8	2 21.3	5 29.7	3 27.8	9 16.2
May 0	1 5.9	1 16.3	1 4.6	5 29.6	2 21.9	5 28.9	3 27.6	9 14.6
June 0	1 27.3	2 7.4	1 11.8	5 27.8	2 23.2	5 28.2	3 27.8	9 12.9
July 0	2 17.3	2 27.2	1 18.7	5 27.4	2 24.9	5 27.9	3 28.4	9 11.3
Aug. 0	3 7.3	3 17.2	1 25.1	5 28.5	2 26.7	5 28.1	3 29.3	9 9.7
Sept. 0	3 27.4	4 7.0	2 0.1	6 0.9	2 28.4	4 28.8	4 0.3	9 8.1
Oct. 0	4 16.4	4 25.8	2 2.9	6 4.1	2 29.5	5 29.8	4 1.1	9 6.5
Nov. 0	5 5.8	5 15.1	2 2.8	6 7.8	2 29.9	6 0.9	4 1.6	9 4.8
Dec. 0	5 24.3	6 3.5	2 0.0	6 11.3	2 29.5	6 1.9	4 1.8	9 3.2
<b>1954</b>								
Jan. 0	6 13.1	6 22.0	1 25.9	6 14.2	2 28.4	6 2.6	4 1.5	9 1.6
Feb. 0	7 1.3	7 9.7	1 23.4	6 15.9	2 27.0	6 2.9	4 0.9	8 29.9
Mar. 0	7 16.7	7 24.3	1 23.7	6 16.0	2 26.1	6 2.6	4 0.2	8 28.5
Apr. 0	8 1.7	8 7.6	1 26.8	6 14.7	2 25.8	6 1.9	3 29.6	8 26.8
May 0	8 12.2	8 14.9	2 1.9	6 12.6	2 26.3	6 1.1	3 29.3	8 25.8
June 0	8 15.0	8 12.2	2 8.3	6 10.5	2 27.5	6 0.4	3 29.5	8 23.6
July 0	8 7.8	8 3.8	3 15.0	6 9.5	2 29.2	6 0.1	4 0.4	8 22.0
Aug. 0	8 2.4	8 4.2	2 21.9	6 9.9	3 1.0	6 0.2	4 0.9	8 20.4
Sept. 0	8 9.0	8 15.6	2 28.3	6 11.8	3 2.7	6 0.9	4 1.9	8 18.7
Oct. 0	8 23.6	9 2.6	3 3.2	6 14.7	3 4.0	6 1.9	4 2.7	8 17.1
Nov. 0	9 13.0	9 23.2	3 6.2	6 18.3	3 4.5	6 3.0	4 3.4	8 15.5
Dec. 0	10 3.7	10 14.4	3 6.4	6 21.8	3 4.3	6 1.0	4 3.6	8 13.9
Dec. 31	10 25.9	11 6.6	3 3.7	6 25.0	3 3.1	6 4.8	4 3.3	8 12.3

1955-1958: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1955							
Jan. 0	Fri.	8 15 32	10 28 4	24 93	6 034	d 80	d 336.5
Feb. 0	Mon.	9 17 6	0 16 32	28 68	7 527	39.0	367.5
Mar. 0	Mon.	10 15 23	0 25 28	29 16	5 972	67.0	395.5
Apr. 0	Thur.	11 16 16	2 13 56	2 92	7 465	98.0	426.5
May 0	Sat.	0 15 39	3 19 14	5 58	7 942	12.1	456.5
June 0	Tues.	1 15 33	5 7 42	9 33	9 435	43.1	487.5
July 0	Thur.	2 14 13	6 12 59	11 99	9 911	73.1	517.5
Aug. 0	Sun.	3 13 47	8 1 27	15 74	11 404	104.1	548.5
Sept. 0	Wed.	4 13 35	9 19 55	19 49	12 897	19.3	579.5
Oct. 0	Fri.	5 12 49	10 25 13	22 16	13 374	49.3	25.6
Nov. 0	Mon.	6 13 32	0 13 41	25 91	14 887	80.3	56.6
Dec. 0	Wed.	7 13 45	1 18 58	28 57	15 343	110.3	86.6
1956							
Jan. 0	Sat.	8 15 16	3 7 26	2 32	16 836	25.4	117.6
Feb. 0	Tues.	9 16 50	4 25 54	6 07	18 329	56.4	148.6
Mar. 0	Wed.	10 16 8	5 18 1	7 65	17 790	85.4	177.6
Apr. 0	Sat.	11 17 0	7 6 29	11 40	19 283	0.5	208.6
May 0	Mon.	0 16 22	8 11 45	14 06	19 760	30.5	238.6
June 0	Thur.	1 16 15	10 0 15	17 81	21 252	61.5	269.6
July 0	Sat.	2 14 55	11 5 32	20 47	21 729	91.5	299.6
Aug. 0	Tues.	3 14 30	0 24 0	24 23	23 222	6.6	330.6
Sept. 0	Fri.	4 14 18	2 12 28	27 98	24 715	37.6	361.6
Oct. 0	Sun.	5 13 33	3 17 46	0 04	25 192	67.6	391.6
Nov. 0	Wed.	6 14 17	5 6 14	4 39	26 684	98.6	422.6
Dec. 0	Fri.	7 14 30	6 11 31	7 05	27 161	12.8	452.6
1957							
Jan. 0	Mon.	8 16 2	7 29 59	10 80	28 654	43.8	483.6
Feb. 0	Thur.	9 17 36	9 18 27	14 56	0 147	74.8	514.6
Mar. 0	Thur.	10 15 53	9 27 23	15 04	28 592	102.8	542.6
Apr. 0	Sun.	11 16 45	11 15 51	18 79	0 085	17.9	573.6
May 0	Tues.	0 16 7	0 21 9	21 45	0 562	47.9	19.7
June 0	Fri.	1 16 1	2 9 38	25 21	2 054	78.9	50.7
July 0	Sun.	2 14 40	3 14 54	27 87	2 531	108.9	80.7
Aug. 0	Wed.	3 14 15	5 3 22	1 62	4 024	24.0	111.7
Sept. 0	Sat.	4 14 3	6 21 50	5 37	5 517	55.0	142.7
Oct. 0	Mon.	5 13 18	7 27 8	8 03	5 994	85.0	172.7
Nov. 0	Thur.	6 14 2	9 15 36	11 78	7 486	0.1	203.7
Dec. 0	Sat.	7 14 15	10 20 54	14 45	7 963	30.1	233.7
1958							
Jan. 0	Tues.	8 15 47	0 9 21	18 20	9 456	61.1	264.7
Feb. 0	Fri.	9 17 20	1 27 49	21 95	10 949	92.1	295.7
Mar. 0	Fri.	10 15 37	2 6 46	22 43	9 394	4.2	323.7
Apr. 0	Mon.	11 16 30	3 25 14	26 19	10 887	35.2	354.7
May 0	Wed.	0 15 52	5 0 31	28 85	11 764	65.2	384.7
June 0	Sat.	1 15 46	6 18 59	2 60	12 856	96.2	415.7
July 0	Mon.	2 14 26	7 24 17	5 26	13 333	10.4	445.7
Aug. 0	Thur.	3 14 1	9 12 45	9 01	14 826	41.4	476.7
Sept. 0	Sun.	4 13 48	11 1 13	12 76	16 319	72.4	507.7
Oct. 0	Tues.	5 13 3	0 6 30	15 43	16 796	102.4	537.7
Nov. 0	Fri.	6 13 46	1 24 58	19 18	18 288	17.5	568.7
Dec. 0	Sun.	7 13 59	3 0 16	21 84	18 765	47.5	14.8
Dec. 31	Wed.	8 15 31	4 18 44	25 59	20 258	78.5	45.8



# EPHEMERIS

Planets: 1955-1958

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1955</b>								
Jan. 0	10 25.9	11 6.6	3 3.7	6 25.0	3 3.1	6 4.8	4 3.3	8 12.3
Feb. 0	11 18.1	11 28.7	2 29.7	6 27.2	3 1.8	6 5.0	4 2.7	8 10.6
Mar. 0	0 7.9	0 18.3	2 27.1	6 27.9	3 0.8	6 4.8	4 2.0	8 9.1
Apr. 0	0 29.3	1 9.5	2 27.0	6 27.2	3 0.4	6 4.1	4 1.4	8 7.5
May 0	1 19.6	1 29.5	2 29.6	6 25.3	3 0.7	6 3.3	4 1.1	8 5.9
June 0	2 10.0	2 19.8	3 4.3	6 23.1	3 1.8	6 2.6	4 1.2	8 4.2
July 0	2 29.5	3 9.1	3 10.2	6 21.6	3 3.4	6 2.3	4 1.7	8 2.7
Aug. 0	3 19.3	3 28.9	3 16.9	6 21.4	3 5.3	6 2.4	4 2.6	8 1.0
Sept. 0	4 9.0	4 18.6	3 23.7	6 22.7	3 7.1	6 3.0	4 3.6	7 29.4
Oct. 0	4 28.2	5 7.7	3 29.7	6 25.2	3 8.4	6 3.9	4 4.5	7 28.8
Nov. 0	5 18.0	5 27.7	4 4.8	6 28.6	3 9.1	6 5.1	4 5.1	7 26.1
Dec. 0	6 7.4	6 17.1	4 7.7	7 2.1	3 8.9	6 6.1	4 5.4	7 24.6
<b>1956</b>								
Jan. 0	6 27.5	7 7.3	4 8.0	7 5.5	3 7.9	6 6.9	4 5.2	7 22.9
Feb. 0	7 18.0	7 27.7	4 5.4	7 8.2	3 6.6	6 7.2	4 4.5	7 21.3
Mar. 0	8 6.9	8 16.7	4 1.6	7 9.4	3 5.5	6 7.0	4 3.8	7 19.7
Apr. 0	8 27.1	9 6.8	3 28.7	7 9.3	3 5.0	6 6.3	4 3.2	7 18.1
May 0	9 16.3	9 25.5	3 28.5	7 7.8	3 5.2	6 5.5	4 2.9	7 16.5
June 0	10 4.9	10 13.0	4 1.0	7 5.5	3 6.3	6 4.8	4 3.0	7 14.8
July 0	10 20.2	10 25.9	4 5.4	7 3.7	3 7.8	6 4.4	4 3.5	7 13.3
Aug. 0	10 29.6	11 0.3	4 11.3	7 2.9	3 9.7	6 4.5	4 4.4	7 11.6
Sept. 0	10 27.8	10 23.8	4 17.8	7 3.7	3 11.5	6 5.1	4 5.4	7 10.0
Oct. 0	10 20.6	10 20.0	4 24.3	7 5.8	3 12.9	6 6.0	4 6.3	7 8.4
Nov. 0	10 22.6	10 27.3	5 0.4	7 8.9	3 13.7	6 7.2	4 6.9	7 6.8
Dec. 0	11 3.6	11 11.1	5 5.2	7 12.4	3 13.6	6 8.2	4 7.2	7 5.2
<b>1957</b>								
Jan. 0	11 19.9	11 28.6	5 8.1	7 15.9	3 12.7	6 9.0	4 7.0	7 3.5
Feb. 0	0 8.2	0 17.4	5 8.2	7 18.9	3 11.4	6 9.3	4 6.4	7 1.9
Mar. 0	0 25.5	1 4.9	5 5.8	7 20.6	3 10.3	6 9.2	4 5.7	7 0.2
Apr. 0	1 15.0	1 24.4	5 1.9	7 21.0	3 9.7	6 8.6	4 5.0	6 28.7
May 0	2 3.8	2 13.2	4 20.1	7 20.0	3 9.8	6 7.8	4 4.7	6 27.2
June 0	2 23.3	3 2.7	4 28.8	7 17.9	3 10.7	6 7.0	4 4.7	6 25.5
July 0	3 12.1	3 21.5	5 1.1	7 15.8	3 12.2	6 6.6	4 5.3	6 23.9
Aug. 0	4 1.5	4 11.0	5 5.5	7 14.5	3 14.0	6 6.7	4 6.1	6 22.3
Sept. 0	4 21.2	5 0.8	5 11.3	7 14.7	3 15.9	6 7.2	4 7.1	6 20.6
Oct. 0	5 10.5	5 20.3	5 17.7	7 16.3	3 17.4	6 8.1	4 8.0	6 19.1
Nov. 0	6 0.8	6 10.8	5 24.3	7 19.1	3 18.3	6 9.3	4 8.7	6 17.4
Dec. 0	6 20.9	7 1.2	6 0.3	7 22.4	3 18.3	6 10.3	4 9.0	6 15.8
<b>1958</b>								
Jan. 0	7 12.2	7 22.7	6 5.2	7 26.1	3 17.6	6 11.1	4 8.9	6 14.2
Feb. 0	8 4.0	8 14.8	6 8.0	7 29.3	3 16.3	6 11.5	4 8.3	6 12.5
Mar. 0	8 24.1	9 5.1	6 8.2	8 1.4	3 15.2	6 11.4	4 7.6	6 11.0
Apr. 0	9 16.8	9 27.8	6 5.7	8 2.4	3 14.4	6 10.8	4 6.9	6 9.4
May 0	10 8.9	10 19.9	6 1.9	8 1.9	3 14.4	6 10.0	4 6.5	6 7.8
June 0	11 1.5	11 12.2	5 29.0	8 0.2	3 15.2	6 9.2	4 6.6	6 6.2
July 0	11 22.7	0 2.7	5 28.7	7 28.0	3 16.6	6 8.8	4 7.1	6 4.6
Aug. 0	0 12.7	0 21.3	6 1.0	7 26.3	3 18.4	6 8.8	4 7.9	6 2.9
Sept. 0	0 29.2	1 5.0	6 5.4	7 25.9	3 20.3	6 9.3	4 8.9	6 1.3
Oct. 0	1 8.5	1 9.1	6 11.1	7 26.9	3 21.8	6 10.2	4 9.9	5 29.7
Nov. 0	1 6.2	1 1.0	6 17.7	7 29.3	3 22.9	6 11.3	4 10.6	5 28.1
Dec. 0	0 26.1	0 23.5	6 24.3	8 2.4	3 23.1	6 12.4	4 10.9	5 26.5
Dec. 31	0 24.0	0 27.1	7 0.5	8 6.1	3 22.4	6 13.3	4 10.8	5 24.8

1959-1962 Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1959							
Jan. 0	Wed.	8 15 31	4 18 44	25-59	20-258	d 78-5	d 45-8
Feb. 0	Sat.	9 17 4	6 7 12	29-34	21-751	109-5	76-8
Mar. 0	Sat.	10 15 22	6 16 8	29-83	20-196	21-6	104-8
Apr. 0	Tues.	11 16 15	8 4 36	3-58	21-689	52-6	135-8
May 0	Thur.	0 15 37	9 9 54	6-24	22-165	82-6	165-8
June 0	Sun.	1 15 31	10 28 22	9-99	23-658	113-6	196-8
July 0	Tues.	2 14 11	0 3 39	12-66	24-135	27-7	226-8
Aug. 0	Fri.	3 13 48	1 22 7	16-41	25-628	58-7	257-8
Sept. 0	Mon.	4 13 33	3 10 35	20-16	27-121	89-7	288-8
Oct. 0	Wed.	5 12 47	4 15 53	22-82	27-598	3-9	318-8
Nov. 0	Sat.	6 13 31	6 4 21	26-57	29-090	34-9	349-8
Dec. 0	Mon.	7 13 44	7 9 38	29-23	29-567	64-9	379-8
1960							
Jan. 0	Thur.	8 15 15	8 28 6	2-99	1-060	95-9	410-8
Feb. 0	Sun.	9 16 49	10 16 34	6-74	2-553	11-0	441-8
Mar. 0	Mon.	10 16 7	11 8 41	8-31	2-614	40-0	470-8
Apr. 0	Thur.	11 16 59	0 27 9	12-06	3-506	71-0	501-8
May 0	Sat.	0 16 21	2 2 27	14-72	3-983	101-0	531-8
June 0	Tues.	1 16 14	3 20 55	18-47	5-476	16-1	562-8
July 0	Thur.	2 14 54	4 26 12	21-14	5-953	46-1	8-9
Aug. 0	Sun.	3 14 29	6 14 40	24-89	7-446	77-1	39-9
Sept. 0	Wed.	4 14 17	8 3 8	28-64	8-939	108-1	70-9
Oct. 0	Fri.	5 13 31	9 8 26	1-30	9-415	22-2	100-9
Nov. 0	Mon.	6 14 16	10 26 54	5-05	10-908	53-2	131-9
Dec. 0	Wed.	7 14 29	0 2 11	7-72	11-385	83-2	161-9
1961							
Jan. 0	Sat.	8 16 1	1 20 39	11-47	12-878	114-2	192-9
Feb. 0	Tues.	9 17 34	3 9 7	15-22	14-371	20-3	223-9
Mar. 0	Tues.	10 15 51	3 18 4	15-70	12-816	57-3	251-9
Apr. 0	Fri.	11 16 44	5 6 32	19-45	14-308	88-3	282-9
May 0	Sun.	0 16 6	6 11 49	22-12	14-785	2-5	312-9
June 0	Wed.	1 15 59	8 0 17	25-87	16-278	33-5	343-9
July 0	Fri.	2 14 39	9 5 34	28-53	16-755	63-5	373-9
Aug. 0	Mon.	3 14 14	10 24 2	2-28	18-248	94-5	404-9
Sept. 0	Thur.	1 14 2	0 12 31	6-03	19-740	9-6	435-9
Oct. 0	Sat.	5 13 16	1 17 48	8-70	20-217	39-6	465-9
Nov. 0	Tues.	6 14 0	3 6 16	12-45	21-711	70-6	496-9
Dec. 0	Thur.	7 14 13	4 11 33	15-11	22-187	100-6	526-9
1962							
Jan. 0	Sun.	8 15 45	6 0 1	18-86	23-680	15-7	557-9
Feb. 0	Wed.	9 17 18	7 18 29	22-61	25-173	46-7	4-9
Mar. 0	Wed.	10 15 36	7 27 26	23-10	23-618	74-7	32-9
Apr. 0	Sat.	11 16 28	9 15 54	26-85	25-110	105-7	63-9
May 0	Mon.	0 15 51	10 21 11	29-51	25-587	19-8	93-9
June 0	Thur.	1 15 45	0 9 39	3-26	27-030	50-8	124-9
July 0	Sat.	2 14 24	1 14 57	5-92	27-557	80-8	154-9
Aug. 0	Tues.	3 13 59	3 3 25	9-68	29-050	111-8	185-9
Sept. 0	Fri.	4 13 47	4 21 53	13-43	30-540	27-0	216-9
Oct. 0	Sun.	5 13 1	5 27 10	16-09	1-013	57-0	246-9
Nov. 0	Wed.	6 13 45	7 15 38	19-84	2-512	88-0	277-9
Dec. 0	Fri.	7 13 58	8 20 56	22-50	2-989	2-1	307-9
Dec. 31	Mon.	8 15 29	10 9 24	26-25	4-482	33-1	338-9

# EPHEMERIS

Planets : 1959-1962

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1959</b>								
Jan. 0	0 24.0	0 27.1	7 0.5	8 6.1	3 22.4	6 13.3	4 10.8	5 24.8
Feb. 0	1 2.4	1 8.7	7 5.5	8 9.5	3 21.2	6 13.7	4 10.2	5 23.2
Mar. 0	1 14.8	1 22.4	7 8.2	8 12.0	3 20.0	6 13.6	4 9.5	5 21.7
Apr. 0	2 1.0	2 9.3	7 8.5	8 13.6	3 19.1	6 13.0	4 8.8	5 20.1
May 0	2 17.9	2 26.6	7 7.1	2 13.6	3 19.0	6 12.2	4 8.4	5 18.5
June 0	3 6.1	3 15.0	7 2.3	8 12.3	3 19.7	6 11.4	4 8.4	5 16.8
July 0	3 24.1	4 3.3	6 29.5	8 10.2	3 21.0	6 11.0	4 8.9	5 15.2
Aug. 0	4 13.3	4 22.7	6 29.0	8 8.2	3 22.8	6 10.9	4 9.7	5 13.6
Sept. 0	5 2.9	5 12.6	7 1.3	8 7.2	3 24.7	6 11.4	4 10.7	5 12.0
Oct. 0	5 22.4	6 2.4	7 5.7	8 7.7	3 26.3	6 12.3	4 11.7	5 10.4
Nov. 0	6 13.2	6 23.6	7 11.7	8 9.6	3 27.4	6 13.4	4 12.5	5 8.7
Dec. 0	7 4.1	7 14.7	7 18.3	8 12.5	3 27.8	6 14.5	4 12.8	5 7.1
<b>1960</b>								
Jan. 0	7 26.3	8 7.3	7 25.2	8 16.0	2 27.3	6 15.4	4 12.8	5 5.5
Feb. 0	8 19.2	9 0.5	8 1.6	8 19.6	3 26.1	6 15.8	4 12.2	5 3.8
Mar. 0	9 11.2	9 22.6	8 6.5	8 22.5	3 24.9	6 15.7	4 11.5	5 2.3
Apr. 0	10 5.0	10 16.5	8 9.7	8 24.5	3 23.9	6 15.2	4 10.8	5 0.7
May 0	10 28.1	11 9.5	8 10.2	8 25.1	3 23.6	6 14.4	4 10.4	4 29.1
June 0	11 21.6	0 2.8	8 7.9	8 24.3	3 24.2	6 13.6	4 10.4	4 27.4
July 0	0 13.7	0 24.3	8 4.2	8 22.4	3 25.5	6 13.2	4 10.8	4 25.8
Aug. 0	1 5.2	1 15.0	8 1.1	8 20.2	3 27.2	6 13.1	4 11.6	4 24.2
Sept. 0	1 24.9	2 3.4	8 0.6	8 18.7	3 29.1	6 13.6	4 12.6	4 22.6
Oct. 0	2 11.4	2 17.5	8 2.9	8 18.7	4 0.8	6 14.4	4 13.6	4 21.0
Nov. 0	2 22.6	2 25.1	8 7.6	8 20.1	4 2.0	6 15.5	4 14.4	4 19.3
Dec. 0	2 24.7	2 21.2	8 13.5	8 22.7	4 2.5	6 16.6	4 14.8	4 17.7
<b>1961</b>								
Jan. 0	2 15.2	2 9.9	8 20.6	8 26.2	4 2.1	6 17.5	4 14.7	4 16.1
Feb. 0	2 6.9	2 7.2	8 27.7	8 26.8	4 1.0	6 18.0	4 14.2	4 14.5
Mar. 0	2 9.4	2 13.7	9 3.8	9 2.8	3 29.8	6 17.9	4 13.5	4 13.0
Apr. 0	2 19.7	2 26.3	9 9.3	9 5.3	3 28.7	6 17.4	4 12.7	4 11.3
May 0	3 3.6	3 11.4	9 12.8	9 6.5	3 28.3	6 16.7	4 12.3	4 9.7
June 0	3 20.1	3 28.6	9 13.8	9 6.2	3 28.8	6 15.9	4 12.3	4 8.1
July 0	4 7.3	4 16.2	9 12.0	9 4.6	3 29.9	6 15.3	4 12.7	4 6.5
Aug. 0	4 26.0	5 5.4	9 8.2	9 2.4	4 1.6	6 15.3	4 13.5	4 4.9
Sept. 0	5 15.6	5 25.4	9 4.9	9 0.5	4 0.6	6 15.7	4 14.5	4 3.2
Oct. 0	6 5.4	6 15.7	9 4.1	8 29.9	4 5.3	6 16.5	4 15.5	4 1.6
Nov. 0	6 26.8	7 7.5	9 6.2	9 0.8	4 6.6	6 17.6	4 16.3	4 0.0
Dec. 0	7 18.3	7 29.4	9 10.7	9 3.0	7 7.2	6 18.7	4 16.8	3 28.4
<b>1962</b>								
Jan. 0	8 11.4	8 22.8	9 16.9	9 6.2	4 7.0	6 19.6	4 16.7	3 26.7
Feb. 0	9 5.2	9 16.8	9 24.1	9 9.9	4 5.9	6 20.1	4 16.2	3 25.1
Mar. 0	9 27.0	10 8.8	10 0.8	9 13.1	4 4.7	6 20.1	4 15.5	3 23.6
Apr. 0	10 21.3	11 3.0	10 7.8	9 16.0	4 3.6	6 19.7	4 14.8	3 22.0
May 0	11 14.6	11 26.1	10 13.5	9 17.7	4 3.1	6 18.9	4 14.3	3 20.4
June 0	0 8.2	0 19.3	10 17.7	9 18.0	4 3.4	6 18.1	4 14.2	3 18.7
July 0	1 0.2	1 10.8	10 19.4	9 16.0	4 4.4	6 17.5	4 14.6	3 17.2
Aug. 0	1 21.8	2 1.8	10 18.1	9 14.8	4 6.1	6 17.4	4 15.4	3 15.5
Sept. 0	2 12.1	2 21.3	10 14.5	9 12.7	4 8.0	6 17.8	4 16.4	3 13.9
Oct. 0	3 0.1	3 8.3	10 10.9	9 11.5	4 9.8	6 18.6	4 17.5	3 12.3
Nov. 0	3 16.1	3 22.5	10 9.5	9 11.8	4 11.2	6 19.7	4 18.3	3 10.7
Dec. 0	3 27.5	4 0.7	10 11.1	9 13.6	4 11.9	6 20.8	4 18.8	3 9.1
Dec. 31	4 1.3	3 28.9	10 15.5	9 16.5	4 11.8	6 21.7	4 18.8	3 7.4

## 1963-1966: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1963							
Jan. 0	Mon.	8 15 29	8 9 24	26 25	4 482	33.1	338.9
Feb. 0	Thur.	9 17 3	11 27 52	0 01	5 974	64.1	369.9
Mar. 0	Thur.	10 15 20	0 6 48	0 49	4 420	92.1	397.9
Apr. 0	Sun.	11 16 13	1 25 16	4 24	5 912	7.2	428.9
May 0	Tues.	0 15 36	3 0 33	6 90	6 389	37.2	458.9
June 0	Fri.	1 15 30	4 19 2	10 66	7 882	68.2	489.9
July 0	Sun.	2 14 10	5 24 19	13 32	8 359	98.2	519.9
Aug. 0	Wed.	3 13 44	7 12 47	17 07	9 852	13.3	550.9
Sept. 0	Sat.	4 13 32	9 1 15	20 82	11 344	44.3	581.9
Oct. 0	Mon.	5 12 46	10 6 32	23 48	11 821	74.3	28.0
Nov. 0	Thur.	6 13 30	11 25 0	27 23	13 314	105.3	59.0
Dec. 0	Sat.	7 13 42	1 0 18	29 90	13 791	19.4	89.0
1964							
Jan. 0	Tues.	8 15 14	2 18 46	3 65	15 284	50.4	120.0
Feb. 0	Fri.	9 16 47	4 7 14	7 40	16 776	81.4	151.0
Mar. 0	Sat.	10 16 5	4 29 21	8 97	16 237	110.4	180.0
Apr. 0	Tues.	11 16 57	6 17 49	12 72	17 730	25.6	211.0
May 0	Thur.	0 16 19	7 23 6	15 39	18 207	55.6	241.0
June 0	Sun.	1 16 13	9 11 34	19 14	19 700	86.6	272.0
July 0	Tues.	2 14 52	10 16 52	21 80	20 177	0.7	302.0
Aug. 0	Fri.	3 14 27	0 5 20	25 55	21 669	31.7	333.0
Sept. 0	Mon.	4 14 15	1 23 48	29 30	23 162	62.7	364.0
Oct. 0	Wed.	5 13 30	2 29 5	1 97	23 639	92.7	394.0
Nov. 0	Sat.	6 14 14	4 17 33	5 72	25 132	7.8	425.0
Dec. 0	Mon.	7 14 27	5 22 51	8 38	25 609	37.8	455.0
1965							
Jan. 0	Thur.	8 15 59	7 11 19	12 13	27 102	68.8	486.0
Feb. 0	Sun	9 17 23	8 29 47	15 88	28 594	99.8	517.0
Mar. 0	Sun	10 15 50	9 8 43	16 37	27 639	11.9	545.0
Apr. 0	Wed.	11 16 42	10 27 11	20 12	28 532	42.9	576.0
May 0	Fri.	0 16 4	0 2 29	22 78	29 009	72.9	22.1
June 0	Mon.	1 15 58	1 20 57	26 53	0 502	103.9	53.1
July 0	Wed.	2 14 38	2 26 14	29 19	0 979	18.1	83.1
Aug. 0	Sat.	3 14 12	4 14 42	2 94	2 471	49.1	114.1
Sept. 0	Tues.	4 14 0	6 3 10	6 70	3 964	80.1	145.1
Oct. 0	Thur.	5 13 15	7 8 28	9 36	4 441	110.1	175.1
Nov. 0	Sun.	6 13 59	8 26 56	13 11	5 934	25.2	206.1
Dec. 0	Tues.	7 14 12	10 2 13	15 77	6 411	55.2	236.1
1966							
Jan. 0	Fri.	8 15 43	11 20 41	19 52	7 903	86.2	267.1
Feb. 0	Mon.	9 17 17	1 9 9	23 27	9 396	1.3	298.1
Mar. 0	Mon.	10 15 34	1 18 5	23 76	7 841	29.3	326.1
Apr. 0	Thur.	11 16 27	3 6 33	27 51	9 334	60.3	357.1
May 0	Sat.	0 15 49	4 11 51	0 17	9 811	90.3	387.1
June 0	Tues.	1 15 43	6 0 19	3 92	11 304	5.4	418.1
July 0	Thur.	2 14 23	7 5 36	6 59	11 781	35.4	448.1
Aug. 0	Sun.	3 13 58	8 24 4	10 34	13 273	66.4	479.1
Sept. 0	Wed.	4 13 45	10 12 32	14 09	14 766	97.4	510.1
Oct. 0	Fri.	5 13 0	11 17 50	16 75	15 243	11.6	540.1
Nov. 0	Mon.	6 13 43	1 6 18	20 50	16 736	42.6	571.1
Dec. 0	Wed.	7 13 56	2 11 35	23 17	17 213	72.6	17.2
Dec. 31	Sat.	8 15 28	4 0 3	26 92	18 705	103.6	48.2

# EPHEMERIS

Planets: 1963-1966

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1963</b>								
Jan. 0	4 1'3	3 28'9	10 15'5	9 16'5	4 11'8	6 21'7	4 18'8	3 7'4
Feb. 0	3 23'4	3 17'6	10 21'7	9 20'1	4 10'9	6 22'3	4 18'3	3 5'8
Mar. 0	3 13'8	3 12'0	10 28'2	9 23'4	4 9'7	6 22'3	4 17'6	3 4'3
Apr. 0	3 13'2	3 16'5	11 5'7	9 26'6	4 8'5	6 21'9	4 16'8	3 2'6
May 0	3 21'5	3 27'6	11 12'7	9 28'8	4 7'9	6 21'1	4 16'3	3 1'0
June 0	4 5'0	4 12'7	11 19'0	9 29'8	4 8'0	6 20'3	4 16'2	2 29'4
July 0	4 20'9	4 29'4	11 23'6	9 29'2	4 9'0	6 19'7	4 16'6	2 27'8
Aug. 0	5 9'0	5 18'3	11 26'0	9 27'4	4 10'5	6 19'6	4 17'4	2 26'2
Sept. 0	5 28'5	6 8'4	11 25'4	9 25'1	4 12'4	6 19'9	4 18'4	2 24'5
Oct. 0	6 18'6	6 29'0	11 22'2	9 23'5	4 14'2	6 20'7	4 19'4	2 22'9
Nov. 0	7 10'5	7 21'4	11 18'3	9 23'2	4 15'8	6 21'7	4 20'3	2 21'3
Dec. 0	8 2'6	8 14'0	11 16'2	9 24'4	4 16'6	6 22'8	4 20'8	2 19'7
<b>1964</b>								
Jan. 0	8 26'3	9 8'0	11 17'3	9 27'0	4 16'6	6 23'8	4 20'8	2 18'1
Feb. 0	9 20'6	10 2'5	11 21'3	10 0'4	4 15'8	6 24'4	4 20'4	2 16'4
Mar. 0	10 13'5	10 25'3	11 26'8	10 3'9	4 14'6	6 24'5	4 19'7	2 14'9
Apr. 0	11 7'8	11 19'4	0 3'7	10 7'4	4 13'4	6 24'0	4 18'9	2 13'2
May 0	0 0'9	0 12'1	0 10'9	10 10'0	4 12'7	6 23'3	4 18'4	2 11'6
June 0	0 24'0	1 4'9	0 18'1	10 11'5	4 12'7	6 22'5	4 18'3	2 10'0
July 0	1 15'5	1 26'0	0 24'4	10 11'5	4 13'5	6 21'9	4 18'6	2 8'4
Aug. 0	2 6'8	2 16'9	0 29'5	10 10'1	4 15'0	6 21'7	4 19'4	2 6'8
Sept. 0	2 27'1	3 6'7	1 2'4	10 7'8	4 16'9	6 22'0	4 20'4	2 5'1
Oct. 0	3 15'6	3 24'7	1 2'4	10 5'9	4 18'8	6 22'8	4 21'4	2 3'5
Nov. 0	4 3'4	4 11'2	0 29'5	10 5'0	4 20'4	6 23'8	4 22'4	2 1'9
Dec. 0	4 18'4	4 25'0	0 25'5	10 5'7	4 21'3	6 25'0	4 22'9	2 0'3
<b>1965</b>								
Jan. 0	5 0'2	5 3'6	0 22'9	10 7'8	4 21'5	6 25'9	4 22'9	1 28'7
Feb. 0	5 4'7	5 2'8	0 23'5	10 11'1	4 20'7	6 26'5	4 22'5	1 27'0
Mar. 0	4 29'0	4 23'2	0 26'5	10 14'4	4 19'6	6 26'6	4 21'9	1 25'5
Apr. 0	4 17'9	4 15'5	1 1'9	10 18'1	4 18'3	6 26'3	4 21'0	1 23'9
May 0	4 16'0	4 18'2	1 8'3	10 21'1	4 17'5	6 25'5	4 20'5	1 22'3
June 0	4 23'9	5 0'0	1 15'5	10 23'2	4 17'4	6 24'7	4 20'3	1 20'7
July 0	5 7'1	5 15'0	1 22'3	10 23'9	4 18'1	6 24'1	4 20'6	1 19'1
Aug. 0	5 24'1	6 3'2	1 28'9	10 23'0	4 19'5	6 23'9	4 21'4	1 17'4
Sept. 0	6 13'4	6 23'3	2 4'2	10 20'9	4 21'4	6 24'1	4 22'4	1 15'8
Oct. 0	7 3'6	7 14'3	2 7'3	10 18'8	4 23'2	6 24'9	4 23'5	1 14'2
Nov. 0	7 26'0	8 7'2	2 7'7	10 17'3	4 24'9	6 25'9	4 24'4	1 12'6
Dec. 0	8 18'6	9 0'2	2 5'3	10 17'3	4 26'0	6 27'0	4 25'0	1 11'0
<b>1966</b>								
Jan. 0	9 12'7	9 24'5	2 1'2	10 19'0	4 26'2	6 28'0	4 25'0	1 9'3
Feb. 0	10 7'2	10 19'0	1 28'3	10 21'9	4 25'7	6 28'7	4 24'7	1 7'7
Mar. 0	10 29'2	11 10'9	1 28'1	10 25'2	4 24'6	6 28'8	4 24'0	1 6'2
Apr. 0	11 23'1	0 4'5	2 0'8	10 28'9	4 23'3	6 28'4	4 23'2	1 4'6
May 0	0 16'6	0 26'6	2 5'6	11 2'3	4 22'3	6 27'8	4 22'6	1 3'0
June 0	1 8'1	1 18'7	2 11'8	11 4'9	4 22'1	6 26'9	4 22'4	1 1'3
July 0	1 29'0	2 9'2	2 18'5	11 6'2	4 22'7	6 26'3	4 22'7	0 29'7
Aug. 0	2 19'9	2 29'7	2 25'4	11 6'0	4 24'0	6 26'0	4 23'4	0 28'1
Sept. 0	3 10'0	3 19'5	3 1'8	11 4'4	4 25'8	6 26'3	4 24'5	0 26'5
Oct. 0	3 28'8	4 8'0	3 7'0	11 2'1	4 27'7	6 27'0	4 25'5	0 24'9
Nov. 0	4 17'5	4 26'1	3 10'4	11 0'1	4 29'4	6 28'0	4 26'5	0 23'2
Dec. 0	5 4'4	5 12'4	3 11'0	10 29'5	5 0'6	6 29'1	4 27'1	0 21'6
Dec. 31	5 20'3	5 27'1	3 8'7	11 0'6	5 1'0	7 0'1	4 27'2	0 20'0

1967-1970: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1967							
Jan. 0	Sat.	8 15 28	4 0 3	26-92	18-705	103-6	48-2
Feb. 0	Tues.	9 17 1	5 18 31	0-67	20-198	18-7	79-2
Mar. 0	Tues.	10 15 19	5 27 27	1-15	18-643	46-7	107-2
Apr. 0	Fri.	11 16 12	7 15 56	4-89	20-136	77-7	138-2
May 0	Sun.	0 15 34	8 21 13	7-55	20-613	107-7	168-2
June 0	Wed.	1 15 28	10 9 41	11-31	22-106	22-8	199-2
July 0	Fri.	2 14 8	11 14 59	13-97	22-583	52-8	229-2
Aug. 0	Mon.	3 13 43	1 3 27	17-73	24-075	83-8	260-2
Sept. 0	Thur.	4 13 31	2 21 55	21-48	25-568	114-8	291-2
Oct. 0	Sat.	5 12 45	3 27 12	24-15	26-045	28-9	321-2
Nov. 0	Tues.	6 13 28	5 15 40	27-89	27-538	59-9	352-2
Dec. 0	Thur.	7 13 41	6 20 57	0-56	28-015	89-9	382-2
1968							
Jan. 0	Sun.	8 15 12	8 9 26	4-31	29-507	5-0	413-2
Feb. 0	Wed.	9 16 46	9 27 54	8-06	1-000	36-0	444-2
Mar. 0	Thur.	10 16 4	10 20 0	9-64	0-461	65-0	473-2
Apr. 0	Sun.	11 16 56	0 8 28	13-38	1-951	96-0	504-2
May 0	Tues.	0 16 18	1 13 46	16-05	2-431	10-2	534-2
June 0	Fri.	1 16 11	3 2 14	19-80	3-924	41-2	565-2
July 0	Sun.	2 14 51	4 7 31	22-46	4-400	71-2	11-3
Aug. 0	Wed.	3 14 26	5 25 59	26-21	5-893	102-2	42-3
Sept. 0	Sat.	4 14 14	7 14 27	29-97	7-386	17-3	73-3
Oct. 0	Mon.	5 13 28	8 19 45	2-03	7-861	47-3	103-3
Nov. 0	Thur.	6 14 13	10 8 13	6-38	9-356	78-3	134-3
Dec. 0	Sat.	7 14 26	11 13 30	9-04	9-833	108-3	164-3
1969							
Jan. 0	Tues.	8 15 58	1 1 58	12-79	11-325	23-4	195-3
Feb. 0	Fri.	9 17 31	2 20 26	16-54	12-818	51-4	226-3
Mar. 0	Fri.	10 15 48	2 29 23	17-03	11-263	82-4	254-3
Apr. 0	Mon.	11 16 41	4 17 51	20-78	12-756	113-4	285-3
May 0	Wed.	0 16 3	5 23 8	23-44	13-233	27-5	315-3
June 0	Sat.	1 15 56	7 11 36	27-19	14-725	58-5	346-3
July 0	Mon.	2 14 36	8 16 54	29-86	15-202	88-5	376-3
Aug. 0	Thur.	3 14 11	10 5 22	3-60	16-695	3-7	407-3
Sept. 0	Sun.	4 13 59	11 23 50	7-36	18-188	34-7	438-3
Oct. 0	Tues.	5 13 13	0 29 7	10-01	18-665	64-7	468-3
Nov. 0	Fri.	6 13 57	2 17 35	13-77	20-158	95-7	499-3
Dec. 0	Sun.	7 14 10	3 22 53	16-44	20-634	9-8	529-3
1970							
Jan. 0	Wed.	8 15 42	5 11 21	20-19	22-127	40-8	560-3
Feb. 0	Sat.	9 17 15	6 29 49	23-94	23-620	71-8	7-3
Mar. 0	Sat.	10 15 33	7 8 45	24-42	22-065	99-8	35-3
Apr. 0	Tues.	11 16 25	8 27 13	28-16	23-558	14-9	66-3
May 0	Thur.	0 15 48	10 2 30	0-84	24-035	44-9	98-3
June 0	Sun.	1 15 42	11 20 58	4-59	25-527	75-9	127-3
July 0	Tues.	2 14 21	0 26 16	7-25	26-004	105-9	157-3
Aug. 0	Fri.	3 13 56	2 14 44	11-00	27-497	21-0	188-3
Sept. 0	Mon.	4 13 44	4 3 12	14-75	28-990	52-0	219-3
Oct. 0	Wed.	5 12 58	5 8 29	17-42	29-467	82-0	249-3
Nov. 0	Sat.	6 13 42	6 26 57	21-17	0-959	113-0	280-3
Dec. 0	Mon.	7 13 55	8 2 15	23-83	1-436	27-1	310-3
Dec. 31	Thur.	8 15 26	9 20 43	27-58	2-929	58-1	341-3

# EPHEMERIS

Planets: 1967-1970

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1967</b>								
Jan. 0	5 20.2	5 26.9	3 8.7	11 0.6	5 1.0	7 0.1	4 27.2	0 20.0
Feb. 0	6 3.0	6 7.2	3 4.6	11 3.0	5 0.6	7 0.8	4 26.9	0 18.3
Mar. 0	6 9.1	6 9.6	3 1.8	11 6.1	4 29.6	7 0.9	4 26.2	0 16.8
Apr. 0	6 6.7	6 1.6	3 1.2	11 9.9	4 28.3	7 0.6	4 25.4	0 15.2
May 0	5 26.1	5 22.5	3 3.4	11 13.6	4 27.2	6 29.9	4 24.8	0 13.6
June 0	5 21.7	5 23.9	3 7.9	11 16.6	4 26.9	6 29.1	4 24.6	0 11.9
July 0	5 28.3	6 4.3	3 13.6	11 18.5	4 27.3	6 28.5	4 24.8	0 10.3
Aug. 0	6 12.1	6 20.5	3 20.2	11 19.0	4 28.5	6 28.2	4 25.5	0 8.7
Sept. 0	7 0.1	7 9.9	3 27.0	11 1.0	5 0.3	6 28.4	4 26.5	0 7.1
Oct. 0	7 2.1	8 0.7	4 3.1	11 15.8	5 2.1	6 29.0	4 27.6	0 5.5
Nov. 0	8 12.4	8 23.7	4 8.4	11 13.6	5 4.0	7 0.1	4 28.6	0 3.8
Dec. 0	9 5.2	9 16.6	4 11.6	11 12.3	5 5.2	7 1.2	4 29.3	0 2.2
<b>1968</b>								
Jan. 0	9 20.2	10 10.9	4 12.3	11 12.7	5 5.8	7 2.2	4 29.5	0 0.6
Feb. 0	10 23.4	11 4.9	4 10.0	11 14.6	5 5.5	7 2.9	4 29.1	11 28.9
Mar. 0	11 5.6	11 26.9	4 6.4	11 17.5	5 4.5	7 3.1	4 28.5	11 27.5
Apr. 0	0 8.8	0 19.8	4 3.2	11 21.3	5 3.2	7 3.8	4 27.6	11 25.8
May 0	1 0.5	1 11.1	4 2.5	11 25.0	5 2.1	7 3.2	4 27.0	11 24.2
June 0	1 22.2	2 2.4	4 4.6	11 28.5	5 1.7	7 1.3	4 26.8	11 22.6
July 0	2 12.5	2 22.4	4 8.8	0 0.9	5 2.0	7 0.7	4 27.0	11 21.0
Aug. 0	3 9.9	3 12.6	4 14.5	0 2.1	5 3.1	7 0.3	4 27.7	11 19.4
Sept. 0	3 22.8	4 3.3	4 21.0	0 1.7	5 4.8	7 0.5	4 28.7	11 17.7
Oct. 0	4 11.8	4 21.1	4 27.5	11 29.9	5 6.7	7 1.2	4 29.8	11 16.1
Nov. 0	5 0.9	5 10.1	5 3.8	11 27.5	5 8.5	7 2.2	5 0.8	11 14.5
Dec. 0	5 19.1	5 28.0	5 8.8	11 25.7	5 9.9	7 3.3	5 1.5	11 12.9
<b>1969</b>								
Jan. 0	6 7.2	6 15.6	5 12.0	11 25.3	5 10.6	7 4.3	5 1.7	11 11.2
Feb. 0	6 24.2	7 1.8	5 12.5	11 26.7	5 10.3	7 5.1	5 1.4	11 9.6
Mar. 0	7 7.8	7 14.0	5 10.4	11 29.2	5 9.5	7 5.3	5 0.8	11 8.1
Apr. 0	7 19.3	7 22.4	5 6.6	0 2.2	5 8.2	7 5.0	4 29.9	11 6.5
May 0	7 23.3	7 21.4	5 3.5	0 6.6	5 7.1	7 4.4	4 29.3	11 4.9
June 0	7 6.8	7 11.9	5 2.8	0 10.3	5 6.5	7 3.6	4 29.0	11 3.2
July 0	7 8.7	7 8.6	5 4.7	0 13.3	5 6.7	7 2.9	4 29.2	11 1.7
Aug. 0	7 11.6	7 16.9	5 8.9	0 15.1	5 7.7	7 2.5	4 29.8	11 0.0
Sept. 0	7 24.4	8 2.8	5 14.6	0 15.4	5 9.3	7 2.7	5 0.8	10 28.4
Oct. 0	8 12.1	8 22.0	5 20.8	0 14.2	5 11.1	7 3.3	5 1.9	10 26.8
Nov. 0	9 3.2	9 14.0	5 27.5	0 11.9	5 13.0	7 4.2	5 3.0	10 25.1
Dec. 0	9 25.0	10 6.1	6 3.6	0 9.7	5 14.5	7 5.3	5 3.7	10 23.6
<b>1970</b>								
Jan. 0	10 18.1	10 29.2	6 8.8	0 8.6	5 15.3	7 6.4	5 3.9	10 21.9
Feb. 0	11 11.1	11 22.1	6 11.9	0 9.3	5 15.2	7 7.2	5 3.7	10 20.3
Mar. 0	0 1.5	0 12.2	6 12.4	0 11.3	5 14.5	7 7.5	5 3.1	10 18.8
Apr. 0	0 23.5	1 4.0	6 10.3	0 14.6	5 13.2	7 7.3	5 2.3	10 17.1
May 0	1 14.2	1 24.4	6 6.6	0 18.3	5 12.0	7 6.6	5 1.6	10 15.5
June 0	2 5.0	2 14.9	6 3.4	0 22.2	5 11.3	7 5.8	5 1.2	10 13.9
July 0	2 24.7	3 4.4	6 2.7	0 25.6	5 11.4	7 5.1	5 1.4	10 12.3
Aug. 0	3 14.7	3 24.3	6 4.7	0 28.1	5 12.2	7 4.7	5 2.0	10 10.7
Sept. 0	4 4.5	4 14.1	6 8.9	0 29.2	5 13.7	7 4.8	5 3.0	10 9.0
Oct. 0	4 23.6	5 3.1	6 14.4	0 28.6	5 15.6	7 5.4	5 4.1	10 7.4
Nov. 0	5 13.3	5 22.8	6 21.0	0 26.6	5 17.5	7 6.3	5 5.2	10 5.8
Dec. 0	6 2.3	6 11.8	6 27.6	0 24.3	5 19.0	7 7.4	5 5.9	10 4.2
Dec. 31	6 22.0	7 1.5	7 3.9	0 22.5	5 20.0	7 8.5	5 6.3	10 2.6

1971-1974: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1971							
Jan. 0	Thur.	8 15 26	9 20 43	27-58	2-929	d 58-1	d 341-3
Feb. 0	Sun.	9 17 0	11 9 11	1-33	4-422	89-1	372-3
Mar. 0	Sun.	10 15 18	11 18 7	1-82	2-867	1-3	400-3
Apr. 0	Wed.	11 16 11	1 6 35	5-57	4-360	32-3	431-3
May 0	Fri.	0 15 33	2 11 53	8-23	4-837	62-3	461-3
June 0	Mon.	1 15 27	4 0 21	11-98	6-329	93-3	492-3
July 0	Wed.	2 14 7	5 5 38	14-64	6-806	7-4	522-3
Aug. 0	Sat.	3 13 42	6 24 6	18-39	8-299	38-4	553-3
Sept. 0	Tues.	4 13 29	8 12 34	22-15	9-792	69-4	0-4
Oct. 0	Thur.	5 12 43	9 17 52	24-81	10-269	99-4	30-4
Nov. 0	Sun.	6 13 26	11 6 20	28-56	11-761	14-5	61-4
Dec. 0	Tues.	7 13 39	0 11 37	1-22	12-238	44-5	91-4
1972							
Jan. 0	Fri.	8 15 10	2 0 5	4-97	13-731	75-5	122-4
Feb. 0	Mon.	9 16 44	3 18 33	8-72	15-224	106-5	153-4
Mar. 0	Tues.	10 16 2	4 10 40	10-30	14-685	19-6	182-4
Apr. 0	Fri.	11 16 54	5 29 8	14-05	16-178	50-6	213-4
May 0	Sun.	0 16 16	7 4 25	16-71	16-654	80-6	243-4
June 0	Wed.	1 16 10	8 22 53	20-46	18-147	111-6	274-4
July 0	Fri.	2 14 49	9 28 11	23-13	18-624	25-8	304-4
Aug. 0	Mon.	3 14 24	11 16 39	26-88	20-117	56-8	335-4
Sept. 0	Thur.	4 14 12	1 5 7	0-63	21-610	87-8	366-4
Oct. 0	Sat.	5 13 27	2 10 24	3-29	22-087	1-9	396-4
Nov. 0	Tues.	6 14 11	3 28 52	7-04	23-579	32-9	427-4
Dec. 0	Thur.	7 14 24	5 4 10	9-70	24-056	62-9	457-4
1973							
Jan. 0	Sun.	8 15 56	6 22 38	13-46	25-549	93-9	488-4
Feb. 0	Wed.	9 17 29	8 11 6	17-21	27-042	9-0	519-4
Mar. 0	Wed.	10 15 47	8 20 2	17-69	25-487	37-0	547-4
Apr. 0	Sat.	11 16 39	10 8 30	21-44	26-990	68-0	578-4
May 0	Mon.	0 16 1	11 13 48	24-11	27-456	98-0	24-5
June 0	Thur.	1 15 55	1 2 16	27-86	28-949	13-1	55-5
July 0	Sat.	2 14 35	2 7 33	0-52	29-426	43-1	85-5
Aug. 0	Tues.	3 14 10	3 26 1	4-27	0-919	74-1	116-5
Sept. 0	Fri.	4 13 57	5 14 29	8-02	2-412	105-1	147-5
Oct. 0	Sun.	5 13 12	6 19 47	10-68	2-888	19-2	177-5
Nov. 0	Wed.	6 13 56	8 8 15	14-44	4-381	50-2	208-5
Dec. 0	Fri.	7 14 9	9 13 32	17-10	4-858	80-2	238-5
1974							
Jan. 0	Mon.	8 15 40	11 2 0	20-85	6-351	111-2	269-5
Feb. 0	Thur.	9 17 14	0 20 28	24-60	7-844	26-4	300-5
Mar. 0	Thur.	10 15 31	0 29 24	25-09	6-289	54-4	328-5
Apr. 0	Sun.	11 16 24	2 17 52	28-84	7-782	85-4	359-5
May 0	Tues.	0 15 46	3 23 10	1-50	8-258	115-4	389-5
June 0	Fri.	1 15 40	5 11 38	5-25	9-751	30-5	420-5
July 0	Sun.	2 14 20	6 16 55	7-91	10-258	60-5	450-5
Aug. 0	Wed.	3 13 55	8 5 23	11-66	11-721	91-5	481-5
Sept. 0	Sat.	4 13 43	9 23 51	15-42	13-214	6-6	512-5
Oct. 0	Mon.	5 12 57	10 29 9	18-08	13-690	36-6	542-5
Nov. 0	Thur.	6 13 40	0 17 37	21-83	15-183	67-6	573-5
Dec. 0	Sat.	7 13 53	1 22 54	24-49	15-660	97-6	19-6
Dec. 31	Tues.	8 15 25	3 11 22	28-24	17-153	12-7	50-6



## EPHEMERIS

Planets: 1971-1974

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1971</b>								
Jan. 0	6 22.0	7 1.5	7 3.9	0 22.5	5 20.0	7 8.5	5 6.3	10 2.6
Feb. 0	7 11.5	7 20.9	7 9.2	0 22.4	5 20.0	7 9.3	5 6.0	10 0.9
Mar. 0	7 29.0	8 8.1	7 12.1	0 23.8	5 19.4	7 9.6	5 5.4	9 29.4
Apr. 0	8 17.7	8 28.3	7 12.9	0 26.6	5 18.2	7 9.4	5 4.6	9 27.7
May 0	9 4.5	9 12.1	7 10.9	1 0.2	5 16.9	7 8.9	5 3.9	9 26.1
June 0	9 19.2	9 24.4	7 7.2	1 4.2	5 16.1	7 8.1	5 3.5	9 24.5
July 0	9 27.7	9 28.4	7 4.0	1 7.9	5 16.0	7 7.3	5 3.8	9 22.9
Aug. 0	9 26.1	9 22.3	7 3.2	1 10.9	5 16.8	7 6.9	5 4.3	9 21.3
Sept. 0	9 19.0	9 18.6	7 5.2	1 12.7	5 18.2	7 6.9	5 5.2	9 19.6
Oct. 0	9 21.1	9 26.0	7 9.3	1 12.9	5 20.0	7 7.5	5 6.3	9 18.0
Nov. 0	10 3.2	10 11.1	7 15.1	1 11.6	5 21.9	7 8.4	5 7.4	9 16.4
Dec. 0	10 19.9	10 29.1	7 21.7	1 9.2	5 23.5	7 9.5	5 8.2	9 14.8
<b>1972</b>								
Jan. 0	11 9.3	11 19.0	7 28.7	1 7.0	5 24.6	7 10.6	5 8.6	9 13.2
Feb. 0	11 29.6	0 9.5	8 5.2	1 6.1	5 24.8	7 11.4	5 8.4	9 11.5
Mar. 0	10 18.7	0 28.6	8 10.3	1 6.9	5 24.3	7 11.8	5 7.8	9 10.0
Apr. 0	1 9.0	1 18.8	8 13.9	1 9.2	5 23.1	7 11.6	5 7.0	9 8.4
May 0	1 28.5	2 8.1	8 14.8	1 12.5	5 21.8	7 11.1	5 6.3	9 6.8
June 0	2 18.3	2 27.9	8 12.9	1 16.4	5 20.9	7 10.2	5 5.9	9 5.2
July 0	3 7.4	3 16.9	8 9.3	1 20.3	5 20.8	7 9.5	5 5.9	9 3.6
Aug. 0	3 27.0	4 6.5	8 6.0	1 23.7	5 21.4	7 9.1	5 6.5	9 1.9
Sept. 0	4 16.7	4 26.3	8 5.1	1 26.2	5 22.7	7 9.1	5 7.5	9 0.3
Oct. 0	5 5.9	5 15.6	8 6.9	1 27.1	5 24.5	7 9.6	5 8.6	8 28.7
Nov. 0	5 26.0	6 5.9	8 11.3	1 26.4	5 26.4	7 10.5	5 9.7	8 27.1
Dec. 0	6 15.9	6 26.0	8 17.1	1 24.4	5 28.1	7 11.6	5 10.5	8 25.5
<b>1973</b>								
Jan. 0	7 6.7	7 17.2	8 24.1	1 21.9	5 29.2	7 12.7	5 10.9	8 23.9
Feb. 0	7 28.0	8 8.4	9 1.5	1 19.8	5 29.6	7 13.7	5 11.1	8 22.2
Mar. 0	8 17.5	8 28.0	9 7.6	1 19.9	5 29.1	7 14.0	5 10.5	8 20.7
Apr. 0	9 9.4	9 19.9	9 13.4	1 21.5	5 27.9	7 13.9	5 9.8	8 19.1
May 0	10 0.5	10 11.0	9 17.2	1 24.5	5 26.7	7 13.2	5 9.0	8 17.5
June 0	10 22.1	11 2.1	9 18.8	1 28.4	5 25.7	7 12.4	5 8.5	8 15.9
July 0	11 12.0	11 21.1	9 17.4	2 2.1	5 25.5	7 11.7	5 8.5	8 14.3
Aug. 0	11 29.9	0 6.9	9 13.8	2 5.9	5 28.1	7 11.1	5 8.9	8 12.6
Sept. 0	0 12.2	0 14.7	9 10.1	2 8.9	5 27.4	7 11.0	5 10.0	8 11.0
Oct. 0	0 13.7	0 10.0	9 8.9	2 10.5	5 29.1	7 11.8	5 10.9	8 9.4
Nov. 0	0 4.9	0 1.5	9 10.7	2 10.5	6 1.0	7 12.6	5 11.9	8 7.7
Dec. 0	0 1.1	0 3.3	9 14.7	2 9.0	6 2.7	7 13.9	5 12.8	8 6.2
<b>1974</b>								
Jan. 0	0 8.4	0 14.5	9 20.9	2 6.6	6 3.9	7 14.9	5 13.6	8 4.5
Feb. 0	0 22.0	0 29.7	9 28.0	2 4.4	6 4.3	7 15.8	5 13.4	8 2.9
Mar. 0	1 6.9	1 15.3	10 4.7	2 3.8	6 3.9	7 16.2	5 12.4	8 1.4
Apr. 0	1 24.7	2 3.6	10 11.9	2 4.7	6 2.8	7 16.1	5 12.5	7 29.7
May 0	2 12.3	2 21.6	10 17.8	2 7.1	6 1.6	7 15.6	5 11.3	7 28.2
June 0	3 1.1	3 10.4	10 22.3	2 10.6	6 0.5	7 14.8	5 10.8	7 26.5
July 0	3 19.8	3 29.1	10 24.6	2 14.4	6 0.2	7 13.9	5 10.8	7 24.9
Aug. 0	4 8.9	4 18.3	10 23.7	2 18.4	6 0.6	7 13.4	5 11.7	7 23.3
Sept. 0	4 28.5	5 8.2	10 20.5	2 21.8	6 1.8	7 13.4	5 12.2	7 21.7
Oct. 0	5 18.0	5 27.8	10 16.6	2 24.1	6 3.5	7 13.9	5 13.5	7 20.1
Nov. 0	6 8.5	6 18.7	10 14.7	2 24.9	6 5.4	7 14.7	5 14.8	7 18.4
Dec. 0	6 29.0	7 9.6	10 15.8	2 24.1	6 7.1	7 15.8	5 15.3	7 16.8
Dec. 31	7 20.8	8 1.5	10 19.9	2 21.9	6 8.4	7 16.9	5 15.7	7 15.2

1975-1978 : Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1975							
Jan. 0	Tues.	8 15 25	3 11 22	28-24	17-153	d	d
Feb. 0	Fri.	9 16 58	4 29 50	1-99	18-646	43-7	81-6
Mar. 0	Fri.	10 15 16	5 8 47	2-48	17-091	71-7	109-6
Apr. 0	Mon.	11 16 9	6 27 15	6-23	18-583	102-7	140-6
May 0	Wed.	0 15 32	8 2 32	8-89	19-060	16-9	170-6
June 0	Sat.	1 15 26	9 21 0	12-64	20-553	47-9	201-6
July 0	Mon.	2 14 5	10 26 18	15-31	21-030	77-9	231-6
Aug. 0	Thur.	3 13 40	0 14 46	19-06	22-523	108-9	262-6
Sept. 0	Sun.	4 13 27	2 3 14	22-81	24-016	24-0	293-6
Oct. 0	Tues.	5 12 42	3 8 31	25-47	24-492	54-0	323-6
Nov. 0	Fri.	6 13 25	4 26 59	29-22	25-985	85-0	354-6
Dec. 0	Sun.	7 13 37	6 2 17	1-89	26-462	115-0	384-6
1976							
Jan. 0	Wed.	8 15 9	7 20 45	5-64	27-955	30-1	415-6
Feb. 0	Sat.	9 16 41	9 9 13	9-39	29-448	61-1	446-6
Mar. 0	Sun.	10 16 0	10 1 20	10-96	28-909	90-1	475-6
Apr. 0	Wed.	11 16 53	11 19 48	14-71	0-401	5-2	506-6
May 0	Fri.	0 16 15	0 25 5	17-37	0-878	35-2	536-6
June 0	Mon.	1 16 8	2 13 33	21-13	2-371	66-2	567-6
July 0	Wed.	2 14 48	3 18 50	23-79	2-848	96-2	13-7
Aug. 0	Sat.	3 14 23	5 7 19	27-54	4-341	11-4	44-7
Sept. 0	Tues.	4 14 11	6 25 47	1-29	5-833	42-4	75-7
Oct. 0	Thur.	5 13 26	8 1 4	3-95	6-310	72-4	105-7
Nov. 0	Sun.	6 14 8	9 19 32	7-70	7-803	103-4	135-7
Dec. 0	Tues.	7 14 21	10 21 49	10-37	8-280	17-5	166-7
1977							
Jan. 0	Fri.	8 15 54	0 13 17	14-12	9-773	48-5	197-7
Feb. 0	Mon.	9 17 28	2 1 45	17-87	11-265	79-5	228-7
Mar. 0	Mon.	10 15 45	2 10 42	18-35	9-711	107-5	256-7
Apr. 0	Thur.	11 16 38	3 29 10	22-11	11-2-3	22-6	287-7
May 0	Sat.	0 16 0	5 4 27	24-77	11-680	52-6	317-7
June 0	Tues.	1 15 54	6 22 55	28-52	13-173	83-6	348-7
July 0	Thur.	2 14 33	7 28 13	1-18	13-650	113-6	378-7
Aug. 0	Sun.	3 14 8	9 16 41	4-93	15-143	28-7	409-7
Sept. 0	Wed.	4 13 56	11 5 9	8-68	16-635	59-7	440-7
Oct. 0	Fri.	5 13 10	0 10 26	11-35	17-112	89-7	470-7
Nov. 0	Mon.	6 13 54	1 28 54	15-10	18-605	4-8	501-7
Dec. 0	Wed.	7 14 7	3 4 12	17-76	19-82	34-8	531-7
1978							
Jan. 0	Sat.	8 15 39	4 22 40	21-51	20-575	65-8	562-7
Feb. 0	Tues.	9 17 12	6 11 8	25-26	22-067	96-8	9-7
Mar. 0	Tues.	10 15 30	6 20 4	25-75	20-512	9-0	37-7
Apr. 0	Fri.	11 16 22	8 8 32	29-50	22-005	40-0	68-7
May 0	Sun.	0 15 45	9 13 50	2-16	22-482	70-0	98-7
June 0	Wed.	1 15 39	11 2 18	5-91	23-975	101-0	129-7
July 0	Fri.	2 14 19	0 7 35	8-58	24-452	15-1	159-7
Aug. 0	Mon.	3 13 53	1 26 3	12-33	25-945	46-1	190-7
Sept. 0	Thur.	4 13 41	3 4 31	16-08	27-437	77-1	221-7
Oct. 0	Sat.	5 12 55	4 19 48	18-74	27-914	107-1	251-7
Nov. 0	Tues.	6 13 39	6 8 17	22-49	29-407	22-2	282-7
Dec. 0	Thur.	7 13 51	7 13 34	25-15	29-884	52-2	312-7
Dec. 31	Sun.	8 15 23	9 2 2	28-91	1-377	83-2	343-7

# EPHEMERIS

Planets : 1975-1978

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1975</b>								
Jan. 0	7 20 <sup>8</sup>	8 1 <sup>5</sup>	10 19 <sup>9</sup>	2 21 <sup>9</sup>	6 8 <sup>4</sup>	7 16 <sup>9</sup>	5 15 <sup>7</sup>	7 15 <sup>2</sup>
Feb. 0	8 13 <sup>1</sup>	8 24 <sup>3</sup>	10 25 <sup>8</sup>	2 19 <sup>5</sup>	6 9 <sup>0</sup>	7 17 <sup>9</sup>	5 15 <sup>7</sup>	7 13 <sup>5</sup>
Mar. 0	9 4 <sup>0</sup>	9 15 <sup>3</sup>	11 2 <sup>3</sup>	2 18 <sup>1</sup>	6 8 <sup>7</sup>	7 18 <sup>2</sup>	5 15 <sup>2</sup>	7 12 <sup>0</sup>
Apr. 0	9 27 <sup>4</sup>	10 8 <sup>8</sup>	11 9 <sup>8</sup>	2 18 <sup>2</sup>	6 7 <sup>7</sup>	7 18 <sup>1</sup>	5 14 <sup>4</sup>	7 10 <sup>3</sup>
May 0	10 20 <sup>2</sup>	11 1 <sup>5</sup>	11 16 <sup>8</sup>	2 20 <sup>0</sup>	6 6 <sup>4</sup>	7 17 <sup>6</sup>	5 13 <sup>6</sup>	7 8 <sup>8</sup>
June 0	11 13 <sup>6</sup>	11 24 <sup>7</sup>	11 23 <sup>3</sup>	2 23 <sup>0</sup>	6 5 <sup>3</sup>	7 16 <sup>8</sup>	5 13 <sup>1</sup>	7 7 <sup>1</sup>
July 0	0 5 <sup>5</sup>	0 16 <sup>0</sup>	11 28 <sup>2</sup>	2 26 <sup>7</sup>	6 4 <sup>9</sup>	7 16 <sup>0</sup>	5 13 <sup>1</sup>	7 5 <sup>5</sup>
Aug. 0	0 26 <sup>9</sup>	1 6 <sup>5</sup>	0 12 <sup>0</sup>	3 0 <sup>7</sup>	6 5 <sup>2</sup>	7 15 <sup>4</sup>	5 13 <sup>6</sup>	7 3 <sup>9</sup>
Sept. 0	1 15 <sup>9</sup>	1 24 <sup>3</sup>	0 10 <sup>0</sup>	3 4 <sup>4</sup>	6 6 <sup>2</sup>	7 15 <sup>4</sup>	5 14 <sup>5</sup>	7 2 <sup>2</sup>
Oct. 0	2 0 <sup>7</sup>	2 5 <sup>9</sup>	11 28 <sup>3</sup>	3 7 <sup>2</sup>	6 7 <sup>8</sup>	7 15 <sup>9</sup>	5 15 <sup>6</sup>	7 0 <sup>7</sup>
Nov. 0	2 8 <sup>9</sup>	2 8 <sup>7</sup>	11 24 <sup>2</sup>	3 8 <sup>8</sup>	6 9 <sup>8</sup>	7 16 <sup>7</sup>	5 16 <sup>6</sup>	6 29 <sup>0</sup>
Dec. 0	2 4 <sup>9</sup>	1 29 <sup>6</sup>	11 21 <sup>7</sup>	3 8 <sup>8</sup>	6 11 <sup>5</sup>	7 17 <sup>9</sup>	5 17 <sup>6</sup>	6 27 <sup>6</sup>
<b>1976</b>								
Jan. 0	1 23 <sup>9</sup>	1 21 <sup>4</sup>	11 22 <sup>3</sup>	3 7 <sup>1</sup>	6 13 <sup>0</sup>	7 19 <sup>0</sup>	5 18 <sup>0</sup>	6 25 <sup>8</sup>
Feb. 0	1 21 <sup>7</sup>	1 24 <sup>8</sup>	11 25 <sup>8</sup>	3 4 <sup>6</sup>	6 13 <sup>6</sup>	7 20 <sup>0</sup>	5 18 <sup>1</sup>	6 24 <sup>1</sup>
Mar. 0	1 29 <sup>2</sup>	2 5 <sup>1</sup>	0 0 <sup>2</sup>	3 2 <sup>7</sup>	6 13 <sup>4</sup>	7 20 <sup>3</sup>	5 17 <sup>5</sup>	6 22 <sup>7</sup>
Apr. 0	2 12 <sup>4</sup>	2 19 <sup>8</sup>	0 7 <sup>9</sup>	3 2 <sup>1</sup>	6 12 <sup>5</sup>	7 20 <sup>3</sup>	5 16 <sup>8</sup>	6 21 <sup>0</sup>
May 0	2 27 <sup>6</sup>	3 5 <sup>8</sup>	0 15 <sup>0</sup>	3 3 <sup>1</sup>	6 11 <sup>3</sup>	7 19 <sup>8</sup>	5 16 <sup>0</sup>	6 19 <sup>4</sup>
June 0	3 13 <sup>0</sup>	3 23 <sup>7</sup>	0 22 <sup>3</sup>	3 5 <sup>4</sup>	6 10 <sup>2</sup>	7 18 <sup>9</sup>	5 15 <sup>4</sup>	6 17 <sup>8</sup>
July 0	4 2 <sup>6</sup>	4 11 <sup>6</sup>	0 28 <sup>7</sup>	3 9 <sup>0</sup>	6 9 <sup>6</sup>	7 18 <sup>1</sup>	5 15 <sup>3</sup>	6 16 <sup>2</sup>
Aug. 0	4 21 <sup>4</sup>	5 0 <sup>9</sup>	1 4 <sup>1</sup>	3 12 <sup>9</sup>	6 9 <sup>7</sup>	7 17 <sup>6</sup>	5 15 <sup>9</sup>	6 14 <sup>5</sup>
Sept. 0	5 11 <sup>0</sup>	5 20 <sup>8</sup>	1 7 <sup>4</sup>	3 16 <sup>8</sup>	6 10 <sup>7</sup>	7 17 <sup>5</sup>	5 16 <sup>8</sup>	6 12 <sup>9</sup>
Oct. 0	6 0 <sup>7</sup>	6 10 <sup>7</sup>	1 7 <sup>9</sup>	3 20 <sup>1</sup>	6 12 <sup>3</sup>	7 18 <sup>0</sup>	5 18 <sup>0</sup>	6 11 <sup>3</sup>
Nov. 0	6 21 <sup>8</sup>	7 2 <sup>3</sup>	1 5 <sup>3</sup>	3 22 <sup>2</sup>	6 14 <sup>2</sup>	7 18 <sup>8</sup>	5 19 <sup>0</sup>	6 9 <sup>7</sup>
Dec. 0	7 13 <sup>0</sup>	7 23 <sup>9</sup>	1 1 <sup>4</sup>	3 22 <sup>9</sup>	6 16 <sup>0</sup>	7 19 <sup>9</sup>	5 20 <sup>0</sup>	6 8 <sup>1</sup>
<b>1977</b>								
Jan. 0	8 5 <sup>6</sup>	8 17 <sup>1</sup>	0 28 <sup>4</sup>	3 21 <sup>9</sup>	6 17 <sup>4</sup>	7 21 <sup>0</sup>	5 20 <sup>4</sup>	6 6 <sup>4</sup>
Feb. 0	8 29 <sup>0</sup>	9 10 <sup>6</sup>	0 28 <sup>3</sup>	3 20 <sup>1</sup>	6 18 <sup>2</sup>	7 22 <sup>0</sup>	5 20 <sup>5</sup>	6 4 <sup>8</sup>
Mar. 0	9 20 <sup>7</sup>	10 2 <sup>3</sup>	1 0 <sup>9</sup>	3 17 <sup>5</sup>	6 18 <sup>2</sup>	7 22 <sup>5</sup>	5 19 <sup>9</sup>	6 3 <sup>3</sup>
Apr. 0	10 14 <sup>8</sup>	10 26 <sup>6</sup>	1 6 <sup>1</sup>	3 16 <sup>1</sup>	6 17 <sup>3</sup>	7 22 <sup>5</sup>	5 19 <sup>2</sup>	6 1 <sup>7</sup>
May 0	11 8 <sup>2</sup>	11 19 <sup>7</sup>	1 12 <sup>3</sup>	3 16 <sup>4</sup>	6 16 <sup>1</sup>	7 22 <sup>1</sup>	5 18 <sup>4</sup>	6 0 <sup>1</sup>
June 0	0 1 <sup>8</sup>	0 13 <sup>0</sup>	1 19 <sup>4</sup>	3 18 <sup>2</sup>	6 14 <sup>9</sup>	7 21 <sup>3</sup>	5 17 <sup>8</sup>	5 28 <sup>4</sup>
July 0	0 23 <sup>9</sup>	1 4 <sup>6</sup>	1 26 <sup>3</sup>	3 21 <sup>2</sup>	6 14 <sup>2</sup>	7 20 <sup>5</sup>	5 17 <sup>8</sup>	5 26 <sup>8</sup>
Aug. 0	1 15 <sup>6</sup>	1 25 <sup>7</sup>	2 3 <sup>0</sup>	3 24 <sup>9</sup>	6 14 <sup>3</sup>	7 19 <sup>9</sup>	5 18 <sup>3</sup>	5 25 <sup>2</sup>
Sept. 0	2 6 <sup>0</sup>	2 15 <sup>0</sup>	2 8 <sup>4</sup>	3 28 <sup>9</sup>	6 15 <sup>3</sup>	7 19 <sup>8</sup>	5 19 <sup>3</sup>	5 23 <sup>5</sup>
Oct. 0	2 23 <sup>5</sup>	3 1 <sup>3</sup>	2 11 <sup>9</sup>	4 2 <sup>4</sup>	6 16 <sup>6</sup>	7 20 <sup>2</sup>	5 20 <sup>5</sup>	5 21 <sup>9</sup>
Nov. 0	3 8 <sup>3</sup>	3 13 <sup>9</sup>	2 12 <sup>8</sup>	4 5 <sup>2</sup>	6 18 <sup>5</sup>	7 20 <sup>9</sup>	5 21 <sup>5</sup>	5 20 <sup>3</sup>
Dec. 0	3 17 <sup>2</sup>	3 18 <sup>2</sup>	2 10 <sup>7</sup>	4 6 <sup>5</sup>	6 20 <sup>3</sup>	7 22 <sup>0</sup>	5 22 <sup>5</sup>	5 18 <sup>7</sup>
<b>1978</b>								
Jan. 0	3 16 <sup>3</sup>	3 11 <sup>0</sup>	2 6 <sup>8</sup>	4 6 <sup>2</sup>	6 21 <sup>9</sup>	7 23 <sup>1</sup>	5 22 <sup>9</sup>	5 17 <sup>1</sup>
Feb. 0	3 4 <sup>8</sup>	3 0 <sup>5</sup>	2 3 <sup>5</sup>	4 4 <sup>6</sup>	6 22 <sup>7</sup>	7 24 <sup>1</sup>	5 23 <sup>0</sup>	5 15 <sup>5</sup>
Mar. 0	2 29 <sup>0</sup>	3 0 <sup>0</sup>	2 2 <sup>9</sup>	4 2 <sup>2</sup>	6 22 <sup>8</sup>	7 24 <sup>6</sup>	5 22 <sup>5</sup>	5 14 <sup>0</sup>
Apr. 0	3 3 <sup>3</sup>	3 8 <sup>3</sup>	2 5 <sup>2</sup>	4 0 <sup>2</sup>	6 22 <sup>1</sup>	7 24 <sup>7</sup>	5 21 <sup>7</sup>	5 12 <sup>3</sup>
May 0	3 14 <sup>4</sup>	3 21 <sup>2</sup>	2 9 <sup>7</sup>	3 29 <sup>7</sup>	6 21 <sup>0</sup>	7 24 <sup>3</sup>	5 20 <sup>9</sup>	5 10 <sup>7</sup>
June 0	3 29 <sup>2</sup>	4 7 <sup>2</sup>	2 15 <sup>6</sup>	4 0 <sup>9</sup>	6 19 <sup>7</sup>	7 23 <sup>5</sup>	5 20 <sup>3</sup>	5 9 <sup>1</sup>
July 0	4 15 <sup>6</sup>	4 24 <sup>3</sup>	2 22 <sup>1</sup>	4 3 <sup>3</sup>	6 18 <sup>9</sup>	7 22 <sup>7</sup>	5 20 <sup>3</sup>	5 7 <sup>5</sup>
Aug. 0	5 4 <sup>1</sup>	5 13 <sup>3</sup>	2 29 <sup>1</sup>	4 6 <sup>8</sup>	6 18 <sup>8</sup>	7 22 <sup>1</sup>	5 20 <sup>8</sup>	5 5 <sup>9</sup>
Sept. 0	5 23 <sup>5</sup>	6 3 <sup>3</sup>	3 5 <sup>6</sup>	4 10 <sup>7</sup>	6 19 <sup>6</sup>	7 21 <sup>9</sup>	5 21 <sup>7</sup>	5 4 <sup>2</sup>
Oct. 0	6 13 <sup>4</sup>	6 23 <sup>8</sup>	3 10 <sup>9</sup>	4 14 <sup>3</sup>	6 21 <sup>0</sup>	7 22 <sup>3</sup>	5 22 <sup>8</sup>	5 2 <sup>6</sup>
Nov. 0	7 5 <sup>3</sup>	7 15 <sup>9</sup>	3 14 <sup>6</sup>	4 17 <sup>5</sup>	6 22 <sup>8</sup>	7 23 <sup>0</sup>	5 23 <sup>9</sup>	5 1 <sup>0</sup>
Dec. 0	7 26 <sup>9</sup>	8 8 <sup>0</sup>	3 15 <sup>6</sup>	4 19 <sup>5</sup>	6 24 <sup>6</sup>	7 24 <sup>1</sup>	5 24 <sup>9</sup>	4 29 <sup>4</sup>
Dec. 31	8 20 <sup>3</sup>	9 1 <sup>9</sup>	3 13 <sup>7</sup>	4 20 <sup>0</sup>	6 26 <sup>2</sup>	7 25 <sup>2</sup>	5 25 <sup>6</sup>	4 27 <sup>7</sup>

1979-1982 Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1979							
Jan. 0	Sun.	8 15 23	9 2 2	28-91	1-377	83-2	343-7
Feb. 0	Wed.	9 16 57	10 20 30	2-68	2-869	114-2	374-7
Mar. 0	Wed.	10 15 14	10 29 26	3-14	1-314	26-3	402-7
Apr. 0	Sat	11 16 7	0 17 54	6-89	2-807	57-3	433-7
May 0	Mon.	0 15 30	1 23 12	9-56	3-284	87-3	463-7
June 0	Thur.	1 15 24	3 11 40	13-31	4-777	2-5	494-7
July 0	Sat.	2 14 4	4 16 57	15-97	5-254	32-5	524-7
Aug. 0	Tues.	3 13 39	6 5 25	19-72	6-746	63-5	555-7
Sept. 0	Fri.	4 13 26	7 23 54	23-47	8-239	94-5	2-8
Oct. 0	Sun.	5 12 40	8 29 11	26-13	8-716	8-6	32-8
Nov. 0	Wed.	6 13 24	10 17 38	29-89	10-209	39-6	63-8
Dec. 0	Fri.	7 13 38	11 22 56	2-55	10-686	69-6	93-8
1980							
Jan. 0	Mon.	8 15 7	1 11 24	6-30	12-179	100-6	124-8
Feb. 0	Thur.	9 16 41	2 29 52	10-05	13-671	15-7	155-8
Mar. 0	Fri.	10 15 59	3 21 59	11-62	13-132	44-7	184-8
Apr. 0	Mon.	11 16 51	5 10 27	15-38	14-625	75-7	215-8
May 0	Wed.	0 16 13	6 15 45	18-04	15-102	105-7	245-8
June 0	Sat.	1 16 7	8 4 13	21-79	16-595	20-8	276-8
July 0	Mon.	2 14 46	9 9 30	24-45	17-072	50-8	306-8
Aug. 0	Thur.	3 14 21	10 27 57	28-20	18-564	81-8	337-8
Sept. 0	Sun.	4 14 9	0 16 26	1-95	20-057	112-8	368-8
Oct. 0	Tues.	5 13 24	1 21 44	4-62	20-534	26-9	398-8
Nov. 0	Fri.	6 14 8	3 10 12	8-37	22-027	57-9	429-8
Dec. 0	Sun.	7 14 21	4 15 29	11-03	22-504	87-9	459-8
1981							
Jan. 0	Wed.	8 15 53	6 3 57	14-78	23-996	3-1	490-8
Feb. 0	Sat.	9 17 26	7 22 25	18-53	25-489	34-1	521-8
Mar. 0	Sat.	10 15 43	8 1 21	19-02	23-934	62-1	549-8
Apr. 0	Tues.	11 16 36	9 19 49	22-77	25-427	93-1	580-8
May 0	Thur.	0 15 58	10 25 7	25-43	25-904	7-2	26-9
June 0	Sun.	1 15 52	0 13 35	29-18	27-397	38-2	57-9
July 0	Tues.	2 14 32	1 18 52	1-85	27-874	68-2	87-9
Aug. 0	Fri.	3 14 7	3 7 20	5-60	29-366	99-2	118-9
Sept. 0	Mon.	4 13 54	4 25 48	9-35	0-859	14-3	149-9
Oct. 0	Wed.	5 13 9	6 1 6	12-01	1-336	44-3	179-9
Nov. 0	Sat.	6 13 53	7 19 34	15-76	2-829	75-3	210-9
Dec. 0	Mon.	7 14 5	8 24 51	18-42	3-306	105-3	247-9
1982							
Jan. 0	Thur.	8 15 37	10 13 19	22-18	4-798	20-4	271-9
Feb. 0	Sun.	9 17 11	0 1 47	25-93	6-291	51-4	302-9
Mar. 0	Sun.	10 15 28	0 10 44	26-41	4-736	79-4	330-9
Apr. 0	Wed.	11 16 21	1 29 12	0-16	6-229	110-4	361-9
May 0	Fri.	0 15 43	3 4 29	2-82	6-706	24-6	391-9
June 0	Mon.	1 15 37	4 22 57	6-58	8-199	55-6	422-9
July 0	Wed.	2 14 17	5 28 15	9-24	8-675	85-6	452-9
Aug. 0	Sat.	3 13 52	7 16 43	12-99	10-163	0-7	483-9
Sept. 0	Tues.	4 13 40	9 5 11	16-74	11-661	31-7	514-9
Oct. 0	Thur.	5 12 54	10 10 28	19-40	12-133	61-7	544-9
Nov. 0	Sun.	6 13 37	11 28 56	23-15	13-631	92-7	575-9
Dec. 0	Tues.	7 13 50	1 4 14	25-82	14-108	6-8	22-0
Dec. 31	Fri.	8 15 21	2 22 42	29-57	15-600	37-8	53-0

## EPHEMERIS

Planets: 1979-1982

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
1979								
Jan. 0	8 20 <sup>3</sup>	8 1 <sup>9</sup>	3 13 <sup>7</sup>	4 20 <sup>0</sup>	6 26 <sup>2</sup>	7 25 <sup>2</sup>	5 25 <sup>6</sup>	4 27 <sup>7</sup>
Feb. 0	9 14 <sup>4</sup>	9 26 <sup>2</sup>	3 9 <sup>8</sup>	4 18 <sup>7</sup>	6 27 <sup>3</sup>	7 26 <sup>2</sup>	5 25 <sup>9</sup>	4 26 <sup>1</sup>
Mar. 0	10 6 <sup>4</sup>	10 18 <sup>3</sup>	3 6 <sup>7</sup>	4 16 <sup>6</sup>	6 27 <sup>4</sup>	7 26 <sup>8</sup>	5 25 <sup>7</sup>	4 24 <sup>6</sup>
Apr. 0	11 0 <sup>9</sup>	11 12 <sup>5</sup>	3 5 <sup>6</sup>	4 14 <sup>4</sup>	6 26 <sup>9</sup>	7 26 <sup>9</sup>	5 24 <sup>9</sup>	4 22 <sup>9</sup>
May 0	11 24 <sup>0</sup>	0 5 <sup>4</sup>	3 7 <sup>4</sup>	4 13 <sup>2</sup>	6 25 <sup>7</sup>	7 26 <sup>5</sup>	5 24 <sup>2</sup>	4 21 <sup>3</sup>
June 0	0 17 <sup>4</sup>	0 28 <sup>4</sup>	3 11 <sup>7</sup>	4 13 <sup>6</sup>	6 24 <sup>5</sup>	7 25 <sup>8</sup>	5 23 <sup>4</sup>	4 19 <sup>7</sup>
July 0	1 9 <sup>3</sup>	1 19 <sup>7</sup>	3 17 <sup>2</sup>	4 15 <sup>4</sup>	6 23 <sup>6</sup>	7 24 <sup>9</sup>	5 23 <sup>1</sup>	4 18 <sup>1</sup>
Aug. 0	2 0 <sup>7</sup>	2 10 <sup>8</sup>	3 23 <sup>7</sup>	4 18 <sup>5</sup>	6 23 <sup>4</sup>	7 24 <sup>3</sup>	5 23 <sup>4</sup>	4 18 <sup>5</sup>
Sept. 0	2 21 <sup>1</sup>	3 0 <sup>7</sup>	4 0 <sup>2</sup>	4 22 <sup>2</sup>	6 24 <sup>0</sup>	7 24 <sup>2</sup>	5 24 <sup>2</sup>	4 14 <sup>8</sup>
Oct. 0	3 9 <sup>7</sup>	3 18 <sup>3</sup>	4 6 <sup>7</sup>	4 25 <sup>9</sup>	6 25 <sup>2</sup>	7 24 <sup>5</sup>	5 25 <sup>2</sup>	4 13 <sup>2</sup>
Nov. 0	3 27 <sup>3</sup>	4 4 <sup>4</sup>	4 12 <sup>0</sup>	4 29 <sup>4</sup>	6 27 <sup>1</sup>	7 25 <sup>2</sup>	5 26 <sup>3</sup>	4 11 <sup>6</sup>
Dec. 0	4 11 <sup>0</sup>	4 16 <sup>6</sup>	4 15 <sup>7</sup>	5 1 <sup>9</sup>	6 28 <sup>9</sup>	7 26 <sup>2</sup>	5 27 <sup>3</sup>	4 10 <sup>0</sup>
1980								
Jan. 0	4 20 <sup>6</sup>	4 22 <sup>1</sup>	4 16 <sup>7</sup>	5 3 <sup>1</sup>	7 0 <sup>6</sup>	7 27 <sup>3</sup>	5 28 <sup>0</sup>	4 8 <sup>4</sup>
Feb. 0	4 20 <sup>7</sup>	4 17 <sup>6</sup>	4 14 <sup>7</sup>	5 2 <sup>6</sup>	7 1 <sup>7</sup>	7 28 <sup>4</sup>	5 28 <sup>3</sup>	4 6 <sup>7</sup>
Mar. 0	4 11 <sup>0</sup>	4 5 <sup>6</sup>	4 11 <sup>2</sup>	5 0 <sup>8</sup>	7 2 <sup>0</sup>	7 28 <sup>9</sup>	5 28 <sup>1</sup>	4 5 <sup>2</sup>
Apr. 0	4 2 <sup>8</sup>	4 3 <sup>1</sup>	4 7 <sup>8</sup>	4 28 <sup>4</sup>	7 1 <sup>5</sup>	7 29 <sup>1</sup>	5 27 <sup>3</sup>	4 3 <sup>6</sup>
May 0	4 5 <sup>7</sup>	4 10 <sup>0</sup>	4 6 <sup>7</sup>	4 26 <sup>7</sup>	7 0 <sup>5</sup>	7 28 <sup>7</sup>	5 26 <sup>6</sup>	4 2 <sup>0</sup>
June 0	4 16 <sup>3</sup>	4 23 <sup>3</sup>	4 8 <sup>4</sup>	4 26 <sup>4</sup>	6 29 <sup>2</sup>	7 27 <sup>9</sup>	5 25 <sup>8</sup>	4 0 <sup>4</sup>
July 0	5 0 <sup>8</sup>	5 9 <sup>0</sup>	4 12 <sup>2</sup>	4 27 <sup>6</sup>	6 28 <sup>3</sup>	7 27 <sup>2</sup>	5 25 <sup>6</sup>	3 28 <sup>8</sup>
Aug. 0	5 18 <sup>4</sup>	5 27 <sup>4</sup>	4 18 <sup>0</sup>	5 0 <sup>2</sup>	6 28 <sup>0</sup>	7 26 <sup>5</sup>	5 25 <sup>8</sup>	3 27 <sup>1</sup>
Sept. 0	6 8 <sup>5</sup>	6 17 <sup>6</sup>	4 24 <sup>4</sup>	5 3 <sup>6</sup>	6 28 <sup>5</sup>	7 26 <sup>3</sup>	5 26 <sup>6</sup>	3 25 <sup>5</sup>
Oct. 0	6 27 <sup>8</sup>	7 8 <sup>4</sup>	5 0 <sup>8</sup>	5 7 <sup>1</sup>	6 29 <sup>6</sup>	7 26 <sup>6</sup>	5 27 <sup>7</sup>	3 23 <sup>9</sup>
Nov. 0	7 19 <sup>9</sup>	8 1 <sup>0</sup>	5 7 <sup>1</sup>	5 11 <sup>0</sup>	7 1 <sup>3</sup>	7 27 <sup>3</sup>	5 28 <sup>8</sup>	3 22 <sup>2</sup>
Dec. 0	8 12 <sup>4</sup>	8 24 <sup>0</sup>	5 12 <sup>4</sup>	5 13 <sup>9</sup>	7 3 <sup>2</sup>	7 28 <sup>3</sup>	5 29 <sup>8</sup>	3 20 <sup>7</sup>
1981								
Jan. 0	9 6 <sup>4</sup>	9 18 <sup>2</sup>	5 15 <sup>8</sup>	5 15 <sup>6</sup>	7 4 <sup>9</sup>	7 29 <sup>5</sup>	6 0 <sup>5</sup>	3 19 <sup>0</sup>
Feb. 0	10 0 <sup>8</sup>	10 12 <sup>8</sup>	5 16 <sup>8</sup>	5 15 <sup>8</sup>	7 6 <sup>1</sup>	8 0 <sup>5</sup>	6 0 <sup>8</sup>	3 17 <sup>4</sup>
Mar. 0	10 23 <sup>0</sup>	11 4 <sup>7</sup>	5 15 <sup>0</sup>	5 14 <sup>5</sup>	7 6 <sup>5</sup>	8 1 <sup>1</sup>	6 0 <sup>6</sup>	3 15 <sup>9</sup>
Apr. 0	11 17 <sup>1</sup>	11 28 <sup>6</sup>	5 11 <sup>3</sup>	5 12 <sup>2</sup>	7 6 <sup>2</sup>	8 1 <sup>2</sup>	5 29 <sup>8</sup>	3 14 <sup>2</sup>
May 0	0 10 <sup>0</sup>	0 21 <sup>1</sup>	5 7 <sup>9</sup>	5 10 <sup>1</sup>	7 5 <sup>2</sup>	8 0 <sup>9</sup>	5 29 <sup>1</sup>	3 12 <sup>7</sup>
June 0	1 2 <sup>7</sup>	1 13 <sup>4</sup>	5 6 <sup>8</sup>	5 9 <sup>2</sup>	7 3 <sup>9</sup>	8 0 <sup>2</sup>	5 28 <sup>4</sup>	3 11 <sup>0</sup>
July 0	1 23 <sup>9</sup>	2 4 <sup>2</sup>	5 8 <sup>5</sup>	5 9 <sup>7</sup>	7 2 <sup>9</sup>	7 29 <sup>4</sup>	5 28 <sup>1</sup>	3 9 <sup>4</sup>
Aug. 0	2 15 <sup>1</sup>	2 24 <sup>9</sup>	5 12 <sup>3</sup>	5 11 <sup>7</sup>	7 2 <sup>5</sup>	7 28 <sup>7</sup>	5 28 <sup>4</sup>	3 7 <sup>8</sup>
Sept. 0	3 5 <sup>3</sup>	3 14 <sup>7</sup>	5 17 <sup>9</sup>	5 14 <sup>8</sup>	7 2 <sup>8</sup>	7 28 <sup>5</sup>	5 29 <sup>1</sup>	3 6 <sup>1</sup>
Oct. 0	3 24 <sup>1</sup>	4 3 <sup>1</sup>	5 24 <sup>1</sup>	5 18 <sup>5</sup>	7 3 <sup>9</sup>	7 28 <sup>7</sup>	6 0 <sup>1</sup>	3 4 <sup>5</sup>
Nov. 0	4 12 <sup>4</sup>	4 20 <sup>7</sup>	6 0 <sup>8</sup>	5 22 <sup>1</sup>	7 5 <sup>6</sup>	7 29 <sup>4</sup>	6 1 <sup>2</sup>	3 2 <sup>9</sup>
Dec. 0	4 28 <sup>8</sup>	5 6 <sup>2</sup>	6 7 <sup>0</sup>	5 25 <sup>3</sup>	7 7 <sup>4</sup>	8 0 <sup>4</sup>	6 2 <sup>2</sup>	3 1 <sup>3</sup>
1982								
Jan. 0	5 13 <sup>3</sup>	5 19 <sup>0</sup>	6 12 <sup>3</sup>	5 27 <sup>6</sup>	7 9 <sup>2</sup>	8 1 <sup>6</sup>	6 2 <sup>9</sup>	2 29 <sup>7</sup>
Feb. 0	5 23 <sup>4</sup>	5 25 <sup>6</sup>	6 15 <sup>8</sup>	5 28 <sup>4</sup>	7 10 <sup>5</sup>	8 2 <sup>6</sup>	6 3 <sup>2</sup>	2 28 <sup>0</sup>
Mar. 0	5 25 <sup>2</sup>	5 22 <sup>6</sup>	6 16 <sup>7</sup>	5 27 <sup>7</sup>	7 11 <sup>0</sup>	8 3 <sup>2</sup>	6 3 <sup>0</sup>	2 26 <sup>5</sup>
Apr. 0	5 17 <sup>1</sup>	5 11 <sup>5</sup>	6 14 <sup>8</sup>	5 25 <sup>7</sup>	7 10 <sup>8</sup>	8 3 <sup>4</sup>	6 2 <sup>2</sup>	2 24 <sup>9</sup>
May 0	5 7 <sup>8</sup>	5 6 <sup>8</sup>	6 11 <sup>3</sup>	5 23 <sup>5</sup>	7 9 <sup>9</sup>	8 3 <sup>1</sup>	6 1 <sup>5</sup>	2 23 <sup>3</sup>
June 0	5 9 <sup>2</sup>	5 13 <sup>4</sup>	6 7 <sup>9</sup>	5 21 <sup>9</sup>	7 8 <sup>6</sup>	8 2 <sup>4</sup>	6 0 <sup>7</sup>	2 21 <sup>7</sup>
July 0	5 19 <sup>1</sup>	5 26 <sup>0</sup>	6 6 <sup>8</sup>	5 21 <sup>8</sup>	7 7 <sup>6</sup>	8 1 <sup>6</sup>	6 0 <sup>5</sup>	2 20 <sup>1</sup>
Aug. 0	6 4 <sup>5</sup>	6 13 <sup>0</sup>	6 8 <sup>4</sup>	5 23 <sup>2</sup>	7 7 <sup>0</sup>	8 0 <sup>9</sup>	6 0 <sup>7</sup>	2 18 <sup>4</sup>
Sept. 0	6 22 <sup>5</sup>	7 3 <sup>0</sup>	6 12 <sup>4</sup>	5 25 <sup>9</sup>	7 7 <sup>4</sup>	8 0 <sup>6</sup>	6 1 <sup>5</sup>	2 16 <sup>8</sup>
Oct. 0	7 13 <sup>2</sup>	7 23 <sup>8</sup>	6 17 <sup>8</sup>	5 29 <sup>3</sup>	7 8 <sup>2</sup>	8 0 <sup>8</sup>	6 2 <sup>6</sup>	2 15 <sup>2</sup>
Nov. 0	8 5 <sup>7</sup>	8 16 <sup>8</sup>	6 24 <sup>4</sup>	6 3 <sup>0</sup>	7 9 <sup>8</sup>	8 1 <sup>5</sup>	6 3 <sup>7</sup>	2 13 <sup>6</sup>
Dec. 0	8 28 <sup>4</sup>	9 9 <sup>9</sup>	7 1 <sup>0</sup>	6 6 <sup>4</sup>	7 11 <sup>7</sup>	8 2 <sup>5</sup>	6 4 <sup>7</sup>	2 12 <sup>0</sup>
Dec. 31	9 22 <sup>5</sup>	10 4 <sup>3</sup>	7 7 <sup>4</sup>	6 9 <sup>1</sup>	7 13 <sup>4</sup>	8 3 <sup>7</sup>	6 5 <sup>5</sup>	2 10 <sup>3</sup>

## 1983-1986: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1983							
Jan. 0	Fri.	8 15 21	2 22 42	29-57	15-600	d	d
Feb. 0	Mon.	9 16 55	4 11 10	3-32	17 093	37-8	53-0
Mar. 0	Mon.	10 15 13	4 20 6	3-80	15-538	68-8	84-0
Apr. 0	Thur.	11 16 6	6 8 34	7-56	17-031	96-8	112-0
May 0	Sat.	0 15 29	7 13 51	10-22	17-508	11-9	143-0
June 0	Tues.	1 15 23	9 2 19	13-97	19-001	41-9	173-0
July 0	Thur.	2 14 3	10 7 37	16-63	19-477	72-9	204-0
Aug. 0	Sun.	3 13 37	11 26 5	20-38	20-970	102-9	234-0
Sept. 0	Wed.	4 13 25	1 14 33	24-13	22-463	18-0	265-0
Oct. 0	Fri.	5 12 39	2 19 50	26-80	22-940	49-0	296-0
Nov. 0	Mon.	6 13 22	4 8 18	0-55	24-433	79-0	326-0
Dec. 0	Wed.	7 13 34	5 13 36	3-21	24-909	110-0	357-0
1984							
Jan. 0	Sat.	8 15 6	7 2 4	6-96	26-402	24-2	387-0
Feb. 0	Tues.	9 16 39	8 20 32	10-71	27-695	55-2	418-0
Mar. 0	Wed.	10 15 57	9 12 39	12-29	27-356	86-2	449-0
Apr. 0	Sat.	11 16 50	11 1 7	16-04	28-849	115-2	478-0
May 0	Mon.	0 16 12	0 6 24	18-70	29-326	30-3	509-0
June 0	Thur.	1 16 5	1 24 52	22-45	0-818	60-3	539-0
July 0	Sat.	2 14 45	3 0 10	25-11	1-295	91-3	570-0
Aug. 0	Tues.	3 14 20	4 18 38	28-87	2-788	5-4	16-1
Sept. 0	Fri.	4 14 8	6 7 6	2-62	4-281	36-4	47-1
Oct. 0	Sun.	5 13 22	7 12 23	5-28	4-758	67-4	78-1
Nov. 0	Wed.	6 14 7	9 0 51	9-03	6-250	97-4	108-1
Dec. 0	Fri.	7 14 19	10 6 9	11-69	6-727	12-5	139-1
1985							
Jan. 0	Mon.	8 15 51	11 24 37	15-44	8-220	42-5	169-1
Feb. 0	Thur.	9 17 25	1 13 5	19-19	9-713	73-5	200-1
Mar. 0	Thur.	10 15 42	1 22 1	19-68	8-158	104-5	231-1
Apr. 0	Sun.	11 16 35	3 10 29	23-43	9-651	16-6	259-1
May 0	Tues.	0 15 57	4 15 46	26-08	10-128	47-6	290-1
June 0	Fri.	1 15 51	6 4 14	29-85	11-620	77-6	320-1
July 0	Sun.	2 14 30	7 9 32	2-51	12-097	108-6	351-1
Aug. 0	Wed.	3 14 5	8 28 0	6-26	13-590	22-8	381-1
Sept. 0	Sat.	4 13 53	10 16 28	10-01	15-083	53-8	412-1
Oct. 0	Mon.	5 13 7	11 21 45	12-67	15-560	84-8	443-1
Nov. 0	Thur.	6 13 51	1 10 13	16-42	17-052	114-8	473-1
Dec. 0	Sat.	7 14 4	2 15 31	19-09	17-529	29-9	504-1
1986							
Jan. 0	Tues.	8 15 36	4 3 59	22-84	19-022	59-9	534-1
Feb. 0	Fri.	9 17 9	5 22 27	26-59	20-515	90-0	565-1
Mar. 0	Fri.	10 15 26	6 1 23	27-07	18-960	6-0	12-1
Apr. 0	Mon.	11 16 19	7 19 51	0-83	20-453	34-0	40-1
May 0	Wed.	0 15 42	8 25 9	3-49	20-930	65-0	71-1
June 0	Sat.	1 15 36	10 13 37	7-24	22-422	95-0	101-1
July 0	Mon.	2 14 16	11 18 54	9-90	22-899	10-1	132-1
Aug. 0	Thur	3 13 51	1 7 22	13-65	24-392	40-1	162-1
Sept. 0	Sun.	4 13 38	2 25 50	17-40	25-885	71-1	193-1
Oct. 0	Tues.	5 12 52	4 1 8	20-07	26-362	102-3	224-1
Nov. 0	Fri.	6 13 38	5 19 36	23-82	27-354	16-3	254-1
Dec. 0	Sun.	7 13 48	6 24 53	26-48	28-331	47-3	285-1
Dec. 31	Wed.	8 15 20	8 13 21	0-23	29-824	77-3	315-1
						108-3	346-1

# EPHEMERIS

Planets : 1983-1986

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1983</b>								
Jan. 0	8 22.5	10 4.3	7 7.4	6 9.1	7 13.4	8 3.7	6 5.5	2 10.3
Feb. 0	10 16.8	10 28.5	7 12.8	6 10.5	7 14.8	8 4.7	6 5.8	2 8.7
Mar. 0	11 8.6	11 20.1	7 18.1	6 10.4	7 15.4	8 5.4	6 5.6	2 7.1
Apr. 0	0 2.2	0 13.3	7 17.3	6 8.7	7 15.3	8 5.5	6 4.8	2 5.5
May 0	0 24.3	1 5.1	7 15.7	6 6.5	7 14.5	8 5.3	6 4.0	2 3.9
June 0	1 16.4	1 26.8	7 12.1	6 4.7	7 13.3	8 4.6	6 3.3	2 2.3
July 0	2 7.1	2 17.0	7 8.7	6 3.9	7 12.2	8 3.8	6 3.0	2 0.7
Aug. 0	2 27.8	3 7.5	7 7.4	6 4.6	7 11.5	8 3.1	6 3.3	1 29.0
Sept. 0	3 17.8	3 27.2	7 9.1	6 6.9	7 11.6	8 2.8	6 4.1	1 27.4
Oct. 0	4 6.6	4 15.9	7 12.9	6 9.9	7 12.5	8 3.0	6 5.1	1 25.8
Nov. 0	4 25.7	5 4.6	7 18.6	6 13.5	7 14.0	8 3.7	6 6.2	1 24.2
Dec. 0	5 13.4	5 22.0	7 25.2	6 17.1	7 15.8	8 4.6	6 7.2	1 22.6
<b>1984</b>								
Jan. 0	6 0.8	6 8.5	8 2.2	6 20.2	7 17.6	8 5.8	6 8.0	1 20.9
Feb. 0	6 16.2	6 22.8	8 8.9	6 22.1	7 19.1	8 6.8	6 8.2	1 19.3
Mar. 0	6 28.0	7 2.1	8 14.2	6 22.6	7 19.8	8 7.5	6 8.1	1 17.8
Apr. 0	7 4.6	7 3.9	8 18.1	6 21.5	7 19.8	8 7.8	6 7.3	1 16.2
May 0	7 0.6	6 25.7	8 19.5	6 19.6	7 19.1	8 7.5	6 6.5	1 14.6
June 0	6 20.4	6 17.8	8 18.0	6 17.3	7 17.9	8 6.9	6 5.8	1 12.9
July 0	6 18.4	6 22.0	8 14.6	6 16.0	7 16.8	8 6.1	6 5.5	1 11.3
Aug. 0	6 27.7	7 4.7	8 11.0	6 16.2	7 16.0	8 5.3	6 5.8	1 9.7
Sept. 0	7 13.5	7 22.7	8 9.7	6 17.9	7 16.0	8 5.0	6 6.6	1 8.0
Oct. 0	8 2.6	8 13.0	8 11.1	6 20.4	7 16.7	8 5.1	6 7.6	1 6.5
Nov. 0	8 24.7	9 5.5	8 15.2	6 24.1	7 18.2	8 5.8	6 8.6	1 4.8
Dec. 0	9 16.9	9 28.3	8 20.9	6 27.6	7 19.9	8 6.7	6 9.7	1 3.2
<b>1985</b>								
Jan. 0	10 10.6	10 22.0	8 27.8	7 1.0	7 21.8	8 7.9	6 10.7	1 1.6
Feb. 0	11 4.2	11 15.5	9 5.2	7 3.4	7 23.3	8 8.9	6 11.2	0 29.9
Mar. 0	11 25.1	0 6.1	9 11.4	7 4.3	7 24.1	8 9.7	6 11.3	0 28.4
Apr. 0	0 17.8	0 28.4	9 17.5	7 3.9	7 24.3	8 9.9	6 10.7	0 26.8
May 0	1 8.9	1 19.3	9 21.7	7 2.2	7 23.7	8 9.7	6 9.8	0 25.2
June 0	2 0.2	2 10.3	9 23.6	6 29.9	7 22.5	8 9.0	6 9.0	0 23.6
July 0	2 20.3	3 0.0	9 22.7	6 28.2	7 21.3	8 8.2	6 8.5	0 22.0
Aug. 0	3 10.4	3 20.0	9 19.3	6 27.7	7 20.5	8 7.5	6 8.6	0 20.4
Sept. 0	4 0.2	4 9.8	9 15.6	6 28.8	7 20.3	8 7.1	6 9.1	0 18.7
Oct. 0	4 19.3	4 28.6	9 13.8	7 1.1	7 21.0	8 7.3	6 10.1	0 17.1
Nov. 0	5 8.7	5 18.1	9 15.1	7 4.3	7 22.3	8 7.9	6 11.2	0 15.5
Dec. 0	5 27.4	6 6.7	9 18.9	7 7.9	7 24.0	8 8.8	6 12.3	0 13.9
<b>1986</b>								
Jan. 0	6 16.4	6 25.6	9 24.8	7 11.4	7 25.9	8 10.0	6 13.3	0 12.2
Feb. 0	7 5.0	7 13.8	10 1.8	7 14.2	7 27.5	8 11.0	6 13.8	0 10.6
Mar. 0	7 21.2	7 29.5	10 8.5	7 15.7	7 28.4	8 11.8	6 13.9	0 9.1
Apr. 0	8 7.5	8 14.7	10 15.8	7 15.8	7 28.7	8 12.1	6 13.3	0 7.5
May 0	8 20.6	8 25.2	10 22.0	7 14.5	7 28.2	8 11.9	6 12.5	0 5.9
June 0	8 28.1	8 27.8	10 26.9	7 12.4	7 27.1	8 11.3	6 11.7	0 4.3
July 0	8 25.2	8 20.9	10 29.5	7 10.4	7 25.9	8 10.5	6 11.1	0 2.7
Aug. 0	8 17.3	8 16.5	10 29.2	7 9.3	7 25.0	8 9.7	6 11.2	0 1.0
Sept. 0	8 19.0	8 24.1	10 28.2	7 9.7	7 24.7	8 9.3	6 11.7	11 29.4
Oct. 0	9 1.2	9 9.1	10 22.3	7 11.7	7 25.2	8 9.4	6 12.6	11 27.8
Nov. 0	9 18.8	9 28.5	10 19.9	7 14.5	7 26.4	8 10.0	6 13.7	11 26.1
Dec. 0	10 8.6	10 18.9	10 20.6	7 18.0	7 28.1	8 10.9	6 14.8	11 24.5
Dec. 31	11 0.1	11 10.7	10 24.1	7 21.6	8 0.0	8 12.2	6 15.8	11 22.9

## 1987-1990: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1987							
Jan. 0	Wed.	8 15 20	8 13 21	0-23	29-824	d 108-3	d 346-1
Feb. 0	Sat.	9 16 53	10 1 49	3-98	1-317	23-4	377-1
Mar. 0	Sat.	10 15 11	10 10 45	4-47	29-762	51-4	405-1
Apr. 0	Tues.	11 16 4	11 29 13	8-22	1-255	82-4	436-1
May 0	Thur.	0 15 27	1 4 31	10-88	1-731	112-4	466-1
June 0	Sun.	1 15 21	2 22 58	14-63	3-224	27-5	497-1
July 0	Tues.	2 14 1	3 28 16	17-29	3-701	57-5	527-1
Aug. 0	Fri.	3 13 36	5 16 44	21-05	5-194	88-5	558-1
Sept. 0	Mon.	4 13 23	7 5 12	24-80	6-687	3-6	5-2
Oct. 0	Wed.	5 12 37	8 10 30	27-46	7-164	33-6	35-2
Nov. 0	Sat.	6 13 20	9 28 58	1-21	8-656	64-6	66-2
Dec. 0	Mon.	7 13 33	11 4 15	3-87	9-133	94-6	96-2
1988							
Jan. 0	Thur.	8 15 4	0 22 43	7-62	10-626	9-8	127-2
Feb. 0	Sun.	9 16 38	2 11 11	11-38	12-119	40-8	158-2
Mar. 0	Mon.	10 15 56	3 3 18	12-95	11-580	69-8	187-2
Apr. 0	Thur.	11 16 48	4 21 46	16-70	13-072	100-8	218-2
May 0	Sat.	0 16 10	5 27 4	19-36	13-549	14-9	248-2
June 0	Tues.	1 16 4	7 15 32	23-11	15-042	45-9	279-2
July 0	Thur.	2 14 44	8 20 49	25-78	15-519	75-9	309-2
Aug. 0	Sun.	3 14 19	10 9 17	29-53	17-012	106-9	340-2
Sept. 0	Wed.	4 14 6	11 27 45	3-28	18-505	22-0	371-2
Oct. 0	Fri.	5 13 21	1 3 3	5-94	18-981	52-0	401-2
Nov. 0	Mon.	6 14 5	2 21 31	9-69	20-474	83-0	432-2
Dec. 0	Wed.	7 14 18	3 26 48	12-36	20-951	113-0	462-2
1989							
Jan. 0	Sat.	8 15 50	5 15 16	16-11	22-444	28-1	493-2
Feb. 0	Tues.	9 17 23	7 3 44	19-86	23-937	59-1	524-2
Mar. 0	Tues.	10 15 40	7 12 40	20-34	22-382	87-1	552-2
Apr. 0	Fri.	11 16 33	9 1 9	24-09	23-874	2-2	583-2
May 0	Sun.	0 15 55	10 6 26	26-76	24-351	32-2	29-3
June 0	Wed.	1 15 49	11 24 54	0-51	25-844	63-2	60-3
July 0	Fri.	2 14 29	1 0 11	3-17	26-321	93-2	90-3
Aug. 0	Mon.	3 14 4	2 18 59	6-92	27-814	8-4	121-3
Sept. 0	Thur.	4 13 52	4 7 7	10-67	29-306	39-4	152-3
Oct. 0	Sat.	5 13 6	5 12 25	13-34	29-783	69-4	182-3
Nov. 0	Tues.	6 13 50	7 0 53	17-09	1-276	100-4	213-3
Dec. 0	Thur.	7 14 2	8 6 10	19-75	1-753	14-5	243-3
1990							
Jan. 0	Sun.	8 15 34	9 24 38	23-50	3-246	45-5	274-3
Feb. 0	Wed.	9 17 8	11 13 6	27-25	4-739	76-5	305-3
Mar. 0	Wed.	10 15 25	11 22 3	27-74	3-184	104-5	333-3
Apr. 0	Sat.	11 16 18	1 10 31	1 49	4-676	19-6	364-3
May 0	Mon.	0 15 41	2 15 48	4-15	5-153	49-6	394-3
June 0	Thur.	1 15 35	4 4 16	7-90	6-646	80-6	425-3
July 0	Sat.	2 14 14	5 9 34	10-56	7-123	110-6	455-3
Aug. 0	Tues.	3 13 49	6 28 2	14-32	8-616	25-7	486-3
Sept. 0	Fri.	4 13 37	8 16 30	18-07	10-108	56-7	517-3
Oct. 0	Sun.	5 12 51	9 21 47	20-73	10-585	86-7	547-3
Nov. 0	Wed.	6 13 34	11 10 15	24-48	12-078	1-9	578-3
Dec. 0	Fri.	7 13 47	0 15 32	27-14	12-555	31-9	24-4
Dec. 31	Mon.	8 15 18	2 4 1	0-89	14-048	62-9	55-4



# EPHEMERIS

Planets: 1987-1990

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1987</b>								
Jan. 0	11 0 1	11 10 7	10 24 1	7 21 6	8 0 0	8 12 2	6 15 8	11 22 9
Feb. 0	11 22 0	0 2 3	10 29 9	7 24 5	8 1 6	8 13 2	6 16 3	11 21 3
Mar. 0	0 11 5	0 21 6	11 6 1	7 26 6	8 2 6	8 14 1	6 16 4	11 19 7
Apr. 0	1 2 5	1 12 6	11 13 6	7 27 4	8 3 0	8 14 4	6 15 8	11 18 1
May 0	1 22 6	2 2 4	11 20 7	7 26 6	8 2 6	8 14 3	6 15 0	11 16 5
June 0	2 13 0	2 22 7	11 27 5	7 24 7	8 1 6	8 13 6	6 14 2	11 14 9
July 0	3 2 2	3 11 9	0 2 6	7 22 6	8 0 4	8 12 8	6 13 6	11 13 3
Aug. 0	3 22 0	4 1 6	0 6 0	7 21 0	7 23 6	8 12 1	6 13 7	11 11 6
Sept. 0	4 11 8	4 21 3	0 6 5	7 20 9	7 23 0	8 11 5	6 14 2	11 10 0
Oct. 0	5 1 0	5 10 5	0 4 0	7 22 2	7 23 4	8 11 4	6 15 1	11 8 4
Nov. 0	5 20 9	6 0 7	0 0 0	7 24 7	8 0 6	8 12 2	6 16 2	11 6 8
Dec. 0	6 10 4	6 20 2	11 27 0	7 28 0	8 2 2	8 13 0	6 17 3	11 5 2
<b>1988</b>								
Jan. 0	7 0 7	7 10 6	11 27 1	8 1 7	8 4 0	8 14 3	6 18 3	11 3 5
Feb. 0	7 21 4	8 1 3	0 6 1	8 5 0	8 5 7	8 15 3	6 18 8	11 1 9
Mar. 0	8 10 7	8 20 8	0 5 0	8 7 3	8 6 8	8 16 2	6 18 9	11 0 4
Apr. 0	9 1 5	9 11 4	0 11 7	8 8 7	8 7 3	8 16 6	6 18 7	10 28 7
May 0	9 21 4	10 1 3	0 18 8	8 8 4	8 7 0	8 16 5	6 17 5	10 27 1
June 0	10 11 2	10 20 3	0 26 0	8 6 8	8 6 1	8 16 0	6 16 7	10 25 5
July 0	10 28 7	11 6 0	1 2 6	8 4 6	8 4 9	8 15 2	6 16 1	10 23 9
Aug. 0	11 12 1	11 15 5	1 8 3	8 2 8	8 3 8	8 14 3	6 16 2	10 22 3
Sept. 0	11 15 9	11 13 4	1 11 9	8 2 1	8 3 3	8 13 8	6 16 7	10 20 6
Oct. 0	11 9 1	11 5 6	1 12 8	8 2 9	8 3 6	8 13 8	6 17 6	10 19 0
Nov. 0	11 5 1	11 7 3	1 10 8	8 5 1	8 4 7	8 14 3	6 18 7	10 17 4
Dec. 0	11 11 8	11 17 9	1 6 9	8 8 2	8 6 3	8 15 1	6 19 8	10 15 8
<b>1989</b>								
Jan. 0	11 25 6	0 3 7	1 3 6	8 11 8	8 8 1	8 16 4	6 20 8	10 14 2
Feb. 0	0 12 8	0 21 7	1 3 0	8 15 3	8 9 8	8 17 4	6 21 3	10 12 5
Mar. 0	0 29 5	1 8 6	1 6 0	8 17 9	8 11 0	8 18 3	6 21 4	10 11 0
Apr. 0	1 18 4	1 27 7	1 9 9	8 19 7	8 11 6	8 18 6	6 20 8	10 9 4
May 0	2 7 0	2 16 4	1 16 0	8 20 0	8 11 4	8 18 5	6 20 0	10 7 8
June 0	2 26 3	3 5 6	1 23 0	8 18 9	8 10 5	8 17 8	6 19 2	10 6 2
July 0	3 14 9	3 24 4	1 29 9	8 16 9	8 9 3	8 17 0	6 18 6	10 4 6
Aug. 0	4 4 3	4 13 9	2 6 7	8 14 8	8 8 2	8 16 3	6 18 7	10 2 9
Sept. 0	4 24 0	5 3 5	2 12 3	8 13 5	8 7 6	8 15 7	6 19 2	10 1 3
Oct. 0	5 13 3	5 23 2	2 16 0	8 13 8	8 7 8	8 15 6	6 20 1	9 29 7
Nov. 0	6 3 7	6 13 8	2 17 4	8 15 4	8 8 8	8 16 4	6 21 2	9 28 1
Dec. 0	6 23 9	7 4 2	2 15 7	8 18 3	8 10 3	8 17 2	6 22 2	9 26 5
<b>1990</b>								
Jan. 0	7 15 3	7 25 9	2 11 9	8 21 8	8 12 1	8 18 5	6 23 2	9 24 8
Feb. 0	8 7 3	8 18 1	2 8 4	8 25 4	8 13 8	8 19 5	6 23 7	9 23 2
Mar. 0	8 27 6	9 8 6	2 7 4	8 28 2	8 15 1	8 20 4	6 23 8	9 21 7
Apr. 0	9 20 5	10 1 8	2 9 1	9 0 6	8 15 8	8 20 8	6 23 2	9 20 1
May 0	10 12 8	10 24 0	2 13 3	9 1 5	8 15 7	7 20 7	6 22 4	9 18 5
June 0	11 5 7	11 16 6	2 19 1	9 0 9	8 14 9	8 20 2	6 21 6	9 16 8
July 0	11 27 4	0 7 6	2 25 5	8 29 1	8 13 8	4 19 4	6 21 1	9 15 2
Aug. 0	0 18 0	0 27 1	3 2 5	8 26 9	8 12 6	8 18 5	6 21 1	9 13 6
Sept. 0	1 5 8	1 12 6	3 9 0	8 25 3	8 11 9	8 18 0	6 21 6	9 11 9
Oct. 0	1 17 4	1 20 2	3 14 6	8 24 9	8 12 0	8 18 0	6 22 5	9 10 3
Nov. 0	1 19 5	1 15 7	3 18 5	8 26 1	8 12 8	8 18 5	6 23 6	9 8 7
Dec. 0	1 10 2	1 5 5	3 20 1	8 28 5	8 14 2	8 19 3	6 24 7	9 7 1
Dec. 31	1 3 7	1 5 0	3 18 5	9 1 8	8 16 0	8 20 4	6 25 7	9 5 5

## 1991-1994: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1991							
Jan. 0	Mon.	8 15 18	2 4 1	0:89	14:048	62:9	55:4
Feb. 0	Thur.	9 16 52	3 22 29	4:65	15:540	93:9	86:4
Mar. 0	Thur.	10 15 9	4 1 25	5:13	13:986	6:0	114:4
Apr. 0	Sun.	11 16 3	5 19 53	8:88	15:478	37:0	145:4
May 0	Tues.	0 15 26	6 25 10	11:54	15:955	67:0	175:4
June 0	Fri.	1 15 20	8 13 38	15:30	17:448	98:0	206:4
July 0	Sun.	2 14 0	9 18 56	17:96	17:925	12:1	236:4
Aug. 0	Wed.	3 13 34	11 7 24	21:71	19:418	43:1	267:4
Sept. 0	Sat.	4 13 22	0 25 52	25:46	20:910	74:1	298:4
Oct. 0	Mon.	5 12 36	2 1 9	28:12	21:387	104:1	328:4
Nov. 0	Thur.	6 13 19	3 19 37	1:88	22:880	19:2	359:4
Dec. 0	Sat.	7 13 31	4 24 55	4:54	23:357	49:2	389:4
1992							
Jan. 0	Tues.	8 15 3	6 13 23	8:29	24:850	80:2	420:4
Feb. 0	Fri.	9 16 36	8 1 51	12:04	26:342	111:2	451:4
Mar. 0	Sat.	10 15 54	8 23 58	13:61	25:803	24:2	480:4
Apr. 0	Tues.	11 16 47	10 12 26	17:36	27:296	55:3	511:4
May 0	Thur.	0 16 9	11 17 43	20:03	27:773	85:3	541:4
June 0	Sun.	1 16 3	1 6 11	23:78	29:266	0:5	572:4
July 0	Tues.	2 14 42	2 11 29	26:44	29:743	30:5	18:5
Aug. 0	Fri.	3 14 17	3 29 57	0:19	1:235	61:5	49:5
Sept. 0	Mon.	4 14 5	5 18 25	3:94	2:728	92:5	80:5
Oct. 0	Wed.	5 13 19	6 23 42	6:60	3:205	6:6	110:5
Nov. 0	Sat.	6 14 4	8 12 10	10:36	4:698	37:6	141:5
Dec. 0	Mon.	7 14 16	9 17 28	13:02	5:175	67:6	171:5
1993							
Jan. 0	Thur.	8 15 48	11 5 56	16:77	6:668	98:6	202:5
Feb. 0	Sun.	9 17 22	0 24 24	20:52	8:160	13:7	233:5
Mar. 0	Sun.	10 15 39	1 3 20	21:01	6:605	41:7	261:5
Apr. 0	Wed.	11 16 32	2 21 48	24:76	8:098	72:7	292:5
May 0	Fri.	0 15 54	2 27 6	27:42	8:575	102:7	322:5
June 0	Mon.	1 15 48	5 15 34	1:17	10:068	17:8	353:5
July 0	Wed.	2 14 28	6 20 51	3:83	10:545	47:8	383:5
Aug. 0	Sat.	3 14 2	8 9 19	7:58	12:037	78:8	414:5
Sept. 0	Tues.	4 13 50	9 27 47	11:34	13:530	109:8	445:5
Oct. 0	Thur	5 13 4	11 3 4	14:00	14:007	24:0	475:5
Nov. 0	Sun.	6 13 48	0 21 33	17:75	15:500	55:0	506:5
Dec. 0	Tues.	7 14 1	1 26 50	20:41	15:977	85:0	536:5
1994							
Jan. 0	Fri.	8 15 32	3 15 18	24:16	17:469	0:1	567:5
Feb. 0	Mon.	9 17 6	5 3 48	27:91	18:962	31:1	14:5
Mar. 0	Mon.	10 15 23	5 12 42	28:40	17:407	59:1	42:5
Apr. 0	Thur.	11 16 16	7 1 10	2:15	18:900	90:1	73:5
May 0	Sat.	0 15 39	8 6 28	4:81	19:377	4:2	103:5
June 0	Tues.	1 15 33	9 24 56	8:56	20:870	35:2	134:5
July 0	Thur.	2 14 13	11 0 13	11:23	21:347	65:2	164:5
Aug. 0	Sun.	3 13 48	0 18 41	14:98	22:839	96:2	195:5
Sept. 0	Wed.	4 13 35	2 7 9	18:73	24:332	11:3	226:5
Oct. 0	Fri.	5 12 49	3 12 27	21:39	24:809	41:3	256:5
Nov. 0	Mon.	6 13 33	5 0 55	25:14	26:302	72:3	287:5
Dec. 0	Wed.	7 13 45	6 6 12	27:81	26:779	102:3	317:5
Dec. 31	Sat.	8 15 17	7 24 40	1:56	28:271	17:5	348:5

# EPHEMERIS

Planets: 1991-1994

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1991</b>								
Jan. 0	1 3-7	1 5-0	3 18-5	9 1-8	8 16-0	8 20-4	6 25-7	8 5-5
Feb. 0	1 8-7	1 14-0	3 14-7	9 5-4	8 17-8	8 21-5	6 26-5	9 3-8
Mar. 0	1 19-6	1 26-6	3 11-3	9 8-5	8 19-1	8 22-5	6 26-8	9 2-3
Apr. 0	2 4-8	2 12-9	3 9-9	9 11-3	8 19-9	8 23-0	6 26-6	9 0-7
May 0	2 21-2	2 29-8	3 11-3	9 12-7	8 20-0	8 23-0	6 25-8	8 29-1
June 0	3 9-1	3 18-0	3 15-2	9 12-8	8 19-3	8 22-6	6 25-0	8 27-4
July 0	3 27-1	4 6-2	3 20-5	9 11-5	8 18-2	8 21-8	6 24-3	8 25-8
Aug. 0	4 16-1	4 25-5	3 27-0	9 9-2	8 17-0	8 21-0	6 24-0	8 24-2
Sept. 0	5 5-7	5 15-5	4 3-7	9 7-2	8 16-2	8 20-4	6 24-3	8 22-6
Oct. 0	5 25-3	6 5-3	4 10-1	9 6-3	8 16-1	8 20-3	6 25-1	8 21-0
Nov. 0	6 16-1	6 26-4	4 15-6	9 6-9	8 16-9	8 20-7	6 26-0	8 19-3
Dec. 0	7 7-1	7 17-8	4 19-3	9 8-9	8 18-2	8 21-4	6 27-1	8 17-7
<b>1992</b>								
Jan. 0	7 29-4	8 10-4	4 20-8	9 12-0	8 20-0	8 22-5	6 28-1	8 16-1
Feb. 0	8 22-4	9 3-8	4 19-3	9 15-6	8 21-8	8 23-6	6 28-8	8 14-5
Mar. 0	9 14-5	9 26-0	4 15-9	9 18-9	8 23-2	8 24-6	6 29-1	8 13-0
Apr. 0	10 8-4	10 20-0	4 12-3	9 22-0	8 24-1	8 25-1	6 29-0	8 11-3
May 0	11 1-6	11 13-1	4 10-9	9 23-9	8 24-2	8 25-2	6 28-2	8 9-7
June 0	11 25-2	0 6-3	4 12-2	9 24-5	8 23-6	8 24-8	6 27-4	8 8-1
July 0	0 17-3	0 28-0	4 15-9	9 23-7	8 22-5	8 24-0	6 26-7	8 6-5
Aug. 0	1 9-1	1 19-0	4 21-2	9 21-7	8 21-3	8 23-2	6 26-4	8 4-9
Sept. 0	1 29-1	2 7-8	4 27-6	9 19-5	8 20-4	8 22-6	6 26-7	8 3-2
Oct. 0	2 15-8	2 22-9	5 4-0	9 18-1	8 20-3	8 22-4	6 27-5	8 1-6
Nov. 0	2 29-0	3 2-6	5 10-4	9 18-1	8 20-9	8 22-8	6 28-5	8 0-0
Dec. 0	3 3-8	3 2-0	5 15-8	9 19-5	8 22-2	8 23-5	6 29-6	7 28-4
<b>1993</b>								
Jan. 0	2 27-0	2 21-2	5 19-6	9 22-4	8 23-9	8 24-6	7 0-5	7 26-7
Feb. 0	2 16-6	2 15-1	5 20-9	9 25-9	8 25-7	8 25-7	7 1-3	7 25-1
Mar. 0	2 16-1	2 19-2	5 19-7	9 29-3	8 27-1	8 26-7	7 1-6	7 23-6
Apr. 0	2 24-5	3 0-5	5 15-3	10 2-6	8 28-1	8 27-2	7 1-5	7 22-0
May 0	3 7-3	3 14-9	5 12-5	10 5-1	8 28-4	8 27-2	7 0-7	7 20-4
June 0	3 23-4	4 1-7	5 10-9	10 6-3	8 27-9	8 26-8	6 29-9	7 18-7
July 0	4 10-4	4 19-3	5 12-2	10 5-9	8 26-8	8 26-0	6 29-2	7 17-1
Aug. 0	4 29-0	5 8-4	5 15-8	10 4-3	8 25-6	8 25-2	6 28-9	7 15-5
Sept. 0	5 16-5	5 28-4	5 21-2	10 2-1	8 24-7	8 24-6	6 29-2	7 13-9
Oct. 0	6 8-3	6 18-6	5 27-3	10 0-3	8 24-4	8 24-5	7 0-0	7 12-3
Nov. 0	6 29-7	7 10-5	6 4-1	9 29-7	8 25-0	8 24-9	7 0-9	7 10-7
Dec. 0	7 21-4	8 2-4	6 10-3	10 0-6	8 26-1	8 25-6	7 2-0	7 9-1
<b>1994</b>								
Jan. 0	8 14-5	8 26-1	6 15-8	10 3-0	8 27-8	8 26-7	7 3-0	7 7-4
Feb. 0	9 8-3	9 18-4	6 13-6	10 6-4	8 29-6	8 27-8	7 3-8	7 5-8
Mar. 0	10 0-2	10 12-0	6 20-8	10 9-7	9 1-1	8 28-8	7 4-1	7 4-3
Apr. 0	10 24-6	11 6-4	6 19-4	10 13-3	9 2-2	8 29-3	7 3-9	7 2-6
May 0	11 18-0	11 29-4	6 16-1	10 16-2	9 2-5	8 29-4	7 3-1	7 1-0
June 0	0 11-5	0 22-5	6 12-4	10 18-0	9 2-1	8 29-0	7 2-3	6 29-4
July 0	1 3-4	1 14-0	6 11-0	10 18-3	9 1-1	8 28-2	7 1-6	6 27-8
Aug. 0	1 25-1	2 5-2	6 12-2	10 17-2	8 29-9	8 27-4	7 1-3	6 26-2
Sept. 0	2 15-5	2 24-8	6 16-0	10 15-0	8 28-9	8 26-8	7 1-6	6 24-5
Oct. 0	3 3-7	3 12-2	6 21-1	10 12-9	8 28-6	8 26-6	7 2-4	6 22-9
Nov. 0	3 20-3	3 27-2	6 27-6	10 11-7	8 29-0	8 27-0	7 3-4	6 21-3
Dec. 0	4 2-9	4 7-0	7 4-3	10 12-1	9 0-1	8 27-7	7 4-5	6 19-7
Dec. 31	4 9-3	4 8-0	7 10-8	10 14-0	9 1-7	8 28-8	7 5-5	6 18-1

1995-1998: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1995							
Jan. 0	Sat.	8 15 17	7 24 40	1-56	28-271	d 17-5	d 348-5
Feb. 0	Tues.	9 16 50	9 13 8	5-31	29-764	48-5	379-5
Mar. 0	Tues.	10 15 8	9 22 5	5-79	28-209	76-5	407-5
Apr. 0	Fri.	11 16 1	11 10 33	9-54	20-702	107-5	438-5
May 0	Sun.	0 15 24	0 15 50	12-21	0-179	21-6	468-5
June 0	Wed.	1 15 18	2 4 18	15-96	1-872	52-6	499-5
July 0	Fri.	2 13 58	3 9 35	18-62	2-149	82-6	529-5
Aug. 0	Mon.	3 13 33	4 28 4	22-37	3-641	113-6	560-5
Sept. 0	Thur.	4 13 20	6 16 32	26-12	5-134	28-7	7-6
Oct. 0	Sat.	5 12 34	7 21 49	28-79	5-611	58-7	37-6
Nov. 0	Tues.	6 13 17	9 10 17	2-54	7-104	89-7	68-6
Dec. 0	Thur.	7 13 30	10 15 34	5-20	7-581	3-8	98-6
1996							
Jan. 0	Sun.	8 15 1	0 4 2	8-95	9-073	34-8	129-6
Feb. 0	Wed.	9 16 35	1 22 31	12-70	10-566	65-8	160-6
Mar. 0	Thur.	10 15 53	2 14 37	14-28	10-027	94-8	189-6
Apr. 0	Sun.	11 16 45	4 3 5	18-03	11-520	9-9	220-6
May 0	Tues.	0 16 7	5 8 23	20-69	11-997	39-9	250-6
June 0	Fri.	1 16 1	6 26 51	24-44	13-490	70-9	281-6
July 0	Sun.	2 14 41	8 2 8	27-10	13-966	100-9	311-6
Aug. 0	Wed.	3 14 16	9 20 36	0-85	15-459	16-1	342-6
Sept. 0	Sat.	4 14 4	11 9 4	4-61	16-952	47-1	373-6
Oct. 0	Mon.	5 13 18	0 14 22	7-27	17-429	77-1	403-6
Nov. 0	Thur.	6 14 2	2 2 50	11-02	18-922	108-1	434-6
Dec. 0	Sat.	7 14 15	3 8 7	13-68	19-398	22-2	464-6
1997							
Jan. 0	Tues.	8 15 46	4 26 35	17-43	20-891	53-2	495-6
Feb. 0	Fri.	9 17 20	6 15 3	21-18	22-384	84-2	526-6
Mar. 0	Fri.	10 15 37	6 24 0	21-67	20-829	112-2	554-6
Apr. 0	Mon.	11 16 30	8 12 28	25-42	22-322	27-3	1-7
May 0	Wed.	0 15 52	9 17 45	28-08	22-799	57-3	31-7
June 0	Sat.	1 15 46	11 6 13	1-83	24-291	88-3	62-7
July 0	Mon.	2 14 26	0 11 31	4-50	24-768	2-4	92-7
Aug. 0	Thur.	3 14 1	1 29 59	8-25	26-261	33-4	123-7
Sept. 0	Sun.	4 13 49	3 18 27	12-00	27-754	64-4	154-7
Oct. 0	Tues.	5 13 2	4 23 44	14-66	28-231	94-4	184-7
Nov. 0	Fri.	6 13 47	6 12 12	18-41	29-724	9-6	215-7
Dec. 0	Sun.	7 13 59	7 17 30	21-08	0-200	39-6	245-7
1998							
Jan. 0	Wed.	8 15 31	9 5 58	24-83	1-693	70-6	276-7
Feb. 0	Sat.	9 17 4	10 24 26	28-58	3-186	101-6	307-7
Mar. 0	Sat.	10 15 22	11 3 22	29-06	1-631	13-7	335-7
Apr. 0	Tues.	11 16 15	0 21 50	2-81	3-124	44-7	366-7
May 0	Thur.	0 15 38	1 27 7	5-48	3-601	74-7	396-7
June 0	Sun.	1 15 32	3 15 35	9-23	5-093	105-7	427-7
July 0	Tues.	2 14 11	4 20 53	11-89	5-570	19-8	457-7
Aug. 0	Fri.	3 13 46	6 9 21	15-64	7-063	50-8	488-7
Sept. 0	Mon.	4 13 34	7 27 49	19-39	8-556	81-8	519-7
Oct. 0	Wed.	5 12 48	9 3 6	22-06	9-033	111-8	549-7
Nov. 0	Sat.	6 13 31	10 21 34	25-81	10-525	26-9	580-7
Dec. 0	Mon.	7 13 44	11 26 52	28-47	11-002	56-9	26-8
Dec. 31	Thur.	8 15 15	1 15 20	2-22	12-495	87-9	57-8

# EPHEMERIS

Planets: 1995-1998

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>1995</b>								
Jan. 0	4 9.3	4 8.0	7 10.8	10 14.0	9 1.7	8 38.8	7 5.5	6 18.1
Feb. 0	4 3.9	3 28.2	7 16.5	10 17.1	9 3.5	9 0.0	7 6.3	6 16.4
Mar. 0	3 21.5	3 20.3	7 20.1	10 20.3	9 5.0	9 1.0	7 6.6	6 14.9
Apr. 0	3 19.8	3 21.9	7 21.7	10 24.1	9 6.2	9 1.6	7 6.4	6 13.2
May 0	3 26.3	4 1.0	7 20.5	10 27.3	9 6.6	9 1.7	7 5.6	6 11.6
June 0	4 9.0	4 16.3	7 17.0	10 29.6	9 6.3	9 1.4	7 4.8	6 10.0
July 0	4 24.2	5 2.7	7 13.4	11 0.6	9 5.4	9 0.7	7 4.1	6 8.4
Aug. 0	5 12.2	5 21.3	7 11.8	11 0.3	9 4.2	8 29.9	7 3.8	6 6.8
Sept. 0	6 1.6	6 11.4	7 13.1	10 28.3	9 3.2	8 29.2	7 4.1	6 5.1
Oct. 0	6 21.6	7 2.1	7 16.7	10 26.2	9 2.7	8 29.0	7 4.9	6 3.5
Nov. 0	7 13.5	7 24.5	7 22.2	10 24.3	9 3.0	8 29.2	7 5.8	6 1.9
Dec. 0	8 5.7	8 17.1	7 28.6	10 24.0	9 4.0	8 29.9	7 6.9	6 0.3
<b>1996</b>								
Jan. 0	8 29.6	9 12.0	8 5.7	10 25.3	9 5.6	9 0.9	7 7.9	5 28.7
Feb. 0	9 23.8	10 5.7	8 12.5	10 28.0	9 7.4	9 2.1	7 8.7	5 27.0
Mar. 0	10 16.8	10 28.6	8 18.0	11 1.3	9 8.9	9 3.1	7 9.0	5 25.5
Apr. 0	11 11.1	11 22.7	8 22.3	11 5.1	9 10.2	9 3.7	7 8.8	5 23.9
May 0	0 4.0	0 15.3	8 24.1	11 8.6	9 10.7	9 3.9	7 8.0	5 22.3
June 0	0 27.0	1 8.0	8 23.0	11 11.4	9 10.5	9 3.6	7 7.2	5 20.7
July 0	1 18.6	1 28.9	8 19.8	11 13.0	9 9.7	9 2.9	7 6.5	5 19.1
Aug. 0	2 9.9	2 19.8	8 16.0	11 13.1	9 8.4	9 2.1	7 6.2	5 17.4
Sept. 0	3 0.2	3 9.7	8 14.3	11 11.7	9 7.4	9 1.4	7 6.5	5 15.8
Oct. 0	3 18.9	3 27.7	8 15.4	11 9.6	9 6.8	9 1.1	7 7.3	5 14.2
Nov. 0	4 6.9	4 14.0	8 19.1	11 7.4	9 7.0	9 1.3	7 8.2	5 12.6
Dec. 0	4 22.5	4 29.2	8 24.6	11 6.5	9 7.9	9 2.0	7 9.2	5 11.0
<b>1997</b>								
Jan. 0	5 5.4	5 9.7	9 1.5	11 7.2	9 9.5	9 3.0	7 10.2	5 9.3
Feb. 0	5 12.2	5 12.0	9 8.7	11 9.5	9 11.3	9 4.3	7 11.2	5 7.7
Mar. 0	5 9.3	5 4.1	9 15.1	11 12.4	9 12.8	9 5.3	7 11.7	5 6.2
Apr. 0	4 28.1	4 24.2	9 21.4	11 16.2	9 14.1	9 6.0	7 11.8	5 4.6
May 0	4 24.2	4 24.8	9 25.9	11 19.9	9 14.8	9 6.2	7 11.2	5 3.0
June 0	4 25.9	5 4.5	9 28.3	11 22.2	9 14.6	9 5.9	7 10.5	5 1.3
July 0	5 11.3	5 18.9	9 28.0	11 25.3	9 13.9	9 5.2	7 9.6	4 29.7
Aug. 0	5 27.8	6 6.6	9 24.9	11 26.1	9 12.7	9 4.4	7 9.0	4 28.1
Sept. 0	6 16.9	6 26.7	9 20.9	11 25.4	9 11.6	9 3.7	7 9.1	4 26.5
Oct. 0	7 6.9	7 17.6	9 18.8	11 23.4	9 10.9	9 3.4	7 9.6	4 24.9
Nov. 0	7 29.2	8 10.5	9 19.6	11 21.0	9 11.0	9 3.6	7 10.6	4 23.2
Dec. 0	8 22.0	9 3.5	9 22.9	11 19.6	9 11.8	9 4.3	7 11.6	4 21.6
<b>1998</b>								
Jan. 0	9 16.1	9 27.9	9 28.6	11 19.6	9 13.3	9 5.2	7 12.6	4 20.0
Feb. 0	10 10.5	10 22.3	10 5.5	11 21.3	9 15.1	9 6.3	7 13.6	4 18.3
Mar. 0	11 2.5	11 14.2	10 12.3	11 23.9	9 16.6	9 7.4	7 14.0	4 16.8
Apr. 0	11 26.3	0 7.6	10 19.5	11 27.6	9 18.0	9 8.1	7 14.1	4 15.2
May 0	0 18.7	0 29.6	10 25.9	0 1.3	9 18.8	9 8.4	7 13.6	4 13.6
June 0	1 11.1	1 21.6	11 1.2	0 4.9	9 18.8	9 8.1	7 12.7	4 11.9
July 0	2 1.9	2 12.2	11 4.2	0 7.7	9 18.1	9 7.5	7 12.0	4 10.3
Aug. 0	2 22.7	3 2.6	11 4.5	0 9.2	9 16.9	9 6.7	7 11.4	4 8.7
Sept. 0	3 13.0	3 22.4	11 2.0	0 9.1	9 15.8	9 5.9	7 11.4	4 7.1
Oct. 0	4 1.8	4 11.0	10 28.0	0 7.6	9 15.0	9 5.6	7 12.0	4 5.5
Nov. 0	4 20.5	4 29.4	10 25.2	0 5.4	9 15.0	9 5.7	7 13.0	4 3.8
Dec. 0	5 7.9	5 16.0	10 25.3	0 3.2	9 15.7	9 6.3	7 14.1	4 2.2
Dec. 31	5 24.3	6 1.4	10 28.4	0 2.5	9 17.1	9 7.3	7 15.1	4 0.6

# 1999-2002: Sun, Moon

# ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
1999							
Jan. 0	Thur.	8 15 15	1 15 20	2-22	12-495	87-9	57-8
Feb. 0	Sun.	9 16 49	3 3 48	5-97	13-988	3-0	88-8
Mar. 0	Sun.	10 15 6	3 12 44	6-46	12-433	31-0	116-8
Apr. 0	Wed.	11 16 0	5 1 12	10-21	13-926	62-0	147-8
May 0	Fri.	0 15 22	6 6 30	12-87	14-403	92-0	177-8
June 0	Mon.	1 15 17	7 24 58	16-62	15-895	7-2	208-8
July 0	Wed.	2 13 57	9 0 15	19-28	16-372	37-2	238-8
Aug. 0	Sat.	3 13 32	10 18 43	23-03	17-865	68-2	269-8
Sept. 0	Tues.	4 13 19	0 7 11	26-79	19-358	99-2	300-8
Oct. 0	Thur.	5 12 33	1 12 29	29-45	19-835	13-3	330-8
Nov. 0	Sun.	6 13 16	3 0 57	3-20	21-327	44-3	361-8
Dec. 0	Tues.	7 13 28	4 6 14	5-86	21-804	74-3	391-8
2000							
Jan. 0	Fri.	8 14 59	5 24 42	9-61	23-297	105-3	422-8
Feb. 0	Mon.	9 16 33	7 13 10	13-36	24-790	20-4	453-8
Mar. 0	Tues.	10 15 51	8 5 17	14-94	24-251	49-4	482-8
Apr. 0	Fri.	11 16 44	9 23 45	18-69	25-744	80-4	513-8
May 0	Sun.	0 16 5	10 29 2	21-35	26-220	110-4	543-8
June 0	Wed.	1 16 0	0 17 30	25-10	27-713	25-5	574-8
July 0	Fri.	2 14 39	1 22 48	27-77	28-190	55-5	20-9
Aug. 0	Mon.	3 14 14	3 11 16	1-52	29-683	86-5	51-9
Sept. 0	Thur.	4 14 2	4 29 44	5-27	1-176	1-7	82-9
Oct. 0	Sat.	5 13 16	6 5 1	7-93	1-653	31-7	112-9
Nov. 0	Tues.	6 14 1	7 23 30	11-68	3-145	62-7	143-9
Dec. 0	Thur.	7 14 13	8 28 47	14-34	3-622	92-7	173-9
2001							
Jan. 0	Sun.	8 15 45	10 17 15	18-10	5-115	7-8	204-9
Feb. 0	Wed.	9 17 18	0 5 43	21-85	6-608	38-8	235-9
Mar. 0	Wed.	10 15 36	0 14 39	22-33	5-053	66-8	263-9
Apr. 0	Sat.	11 16 28	2 3 7	26-08	6-546	97-8	294-9
May 0	Mon.	0 15 51	3 8 25	28-75	7-022	11-9	324-9
June 0	Thur.	1 15 45	4 26 53	2-50	8-515	42-9	355-9
July 0	Sat.	2 14 25	6 2 10	5-16	8-992	72-9	385-9
Aug. 0	Tues.	3 14 0	7 20 38	8-91	10-485	103-9	416-9
Sept. 0	Fri.	4 13 47	9 9 6	12-66	11-978	19-0	447-9
Oct. 0	Sun.	5 13 1	10 14 24	15-32	12-454	49-0	477-9
Nov. 0	Wed.	6 13 45	0 2 52	19-08	13-947	80-0	508-9
Dec. 0	Fri.	7 13 58	1 8 9	21-74	14-424	110-0	538-9
2002							
Jan. 0	Mon.	8 15 29	2 26 37	25-49	15-917	25-1	569-9
Feb. 0	Thur.	9 17 3	4 15 5	29-24	17-410	56-1	16-9
Mar. 0	Thur.	10 15 20	4 24 1	29-73	15-855	84-1	44-9
Apr. 0	Sun.	11 16 13	6 12 29	3-48	17-348	115-1	75-9
May 0	Tues.	0 15 36	7 17 47	6-14	17-824	29-3	105-9
June 0	Fri.	1 15 30	9 6 15	9-89	19-317	60-3	136-9
July 0	Sun.	2 14 10	10 11 32	12-55	19-794	90-3	166-9
Aug. 0	Wed.	3 13 45	0 0 0	16-30	21-287	5-4	197-9
Sept. 0	Sat.	4 13 32	1 18 28	20-06	22-780	36-4	228-9
Oct. 0	Mon.	5 12 46	2 23 46	22-71	23-256	66-4	258-9
Nov. 0	Thur.	6 13 30	4 12 14	26-47	24-749	97-4	289-9
Dec. 0	Sat.	7 13 42	5 17 31	29-13	25-226	11-5	319-9
Dec. 31	Tues.	8 15 14	7 5 59	2-88	26-719	42-5	350-9

# EPHEMERIS

Planets: 1999-2002

Date	Mars	Mars on 15th	Jupiter	Saturn	Herchel	Neptune	Pluto	Rahu
<b>1999</b>								
Jan. 0	5 24.3	5 1.4	10 28.4	0 2.5	9 17.1	9 7.3	7 15.1	4 0.6
Feb. 0	6 8.1	6 13.3	11 4.0	0 3.5	9 18.9	9 8.5	7 16.1	3 28.9
Mar. 0	6 16.4	6 18.3	11 10.0	0 5.8	9 20.4	9 9.5	7 16.5	3 27.4
Apr. 0	6 17.3	6 13.6	11 17.4	0 9.2	9 21.9	9 10.3	7 16.6	3 25.8
May 0	6 8.1	6 3.1	11 24.5	0 12.9	9 22.7	9 10.5	7 16.1	3 24.2
June 0	6 0.6	6 1.3	0 1.5	0 16.8	9 22.8	9 10.3	7 15.2	3 22.6
July 0	6 4.6	6 9.8	0 6.8	0 19.9	9 22.3	9 9.6	7 14.4	3 21.0
Aug. 0	6 16.9	6 24.9	0 13.5	0 22.1	9 21.1	9 8.8	7 13.9	3 19.4
Sept. 0	7 4.3	7 13.9	0 11.5	0 22.8	9 20.0	9 8.1	7 13.8	3 17.7
Oct. 0	7 23.9	8 4.5	0 9.5	0 22.0	9 19.2	9 7.7	7 14.5	3 16.1
Nov. 0	8 16.2	8 27.4	0 5.6	0 19.9	9 19.0	9 7.9	7 15.4	3 14.5
Dec. 0	9 8.8	9 20.4	0 2.5	0 17.5	9 19.6	9 8.5	7 16.4	3 12.9
<b>2000</b>								
Jan. 0	10 2.7	10 14.5	0 1.8	0 16.1	9 20.9	9 9.4	7 17.4	3 11.2
Feb. 0	10 26.7	11 8.3	0 4.4	0 16.3	9 22.6	9 10.6	7 18.4	3 9.6
Mar. 0	11 18.9	0 0.2	0 9.1	0 18.1	9 24.3	9 11.6	7 18.9	3 8.1
Apr. 0	0 12.0	0 22.9	0 15.5	0 21.2	9 25.8	9 12.4	7 18.9	3 6.5
May 0	1 3.5	1 14.0	0 22.6	0 24.8	9 26.6	9 12.7	7 18.3	3 4.9
June 0	1 25.1	2 5.3	0 29.8	0 29.7	9 26.9	9 12.5	7 17.5	3 3.2
July 0	2 14.7	2 25.2	1 6.4	1 2.3	9 26.4	9 11.9	7 16.8	3 1.7
Aug. 0	3 5.7	3 15.4	1 12.3	1 5.0	9 25.3	9 11.1	7 16.2	3 0.0
Sept. 0	3 25.6	4 5.1	1 16.3	1 6.4	9 24.1	9 10.3	7 16.3	2 28.4
Oct. 0	4 14.6	4 24.0	1 17.7	1 6.3	9 23.2	9 9.9	7 16.7	2 26.8
Nov. 0	5 3.8	5 13.1	1 16.2	1 4.4	9 23.0	9 10.0	7 17.6	2 25.1
Dec. 0	5 22.3	6 1.2	1 12.4	1 2.2	9 23.5	9 10.6	7 18.7	2 23.6
<b>2001</b>								
Jan. 0	6 10.7	6 19.4	1 8.8	1 0.4	9 24.8	9 11.5	7 19.6	2 21.9
Feb. 0	6 28.3	7 6.3	1 7.8	0 29.7	9 26.5	9 12.8	7 20.6	2 20.3
Mar. 0	7 12.8	7 19.8	1 9.6	1 0.8	9 28.1	9 13.8	7 21.1	2 18.8
Apr. 0	7 26.4	8 1.0	1 13.9	1 3.4	9 29.6	9 14.7	7 21.2	2 17.1
May 0	8 3.9	8 4.3	1 19.7	1 6.6	10 0.6	9 15.0	7 20.6	2 15.5
June 0	8 1.9	7 27.4	1 26.6	1 10.7	10 0.9	9 14.9	7 19.8	2 13.9
July 0	7 22.7	7 20.5	2 3.4	1 14.6	10 0.5	9 14.2	7 19.0	2 12.3
Aug. 0	7 21.4	7 25.1	2 10.3	1 17.7	9 29.5	9 13.4	7 18.5	2 10.7
Sept. 0	8 1.3	8 8.8	2 16.1	1 19.9	9 28.3	9 12.7	7 18.5	2 9.0
Oct. 0	8 17.8	8 27.4	2 20.3	1 20.6	9 27.3	9 12.1	7 18.9	2 7.4
Nov. 0	9 7.9	9 18.5	2 22.0	1 19.6	9 27.0	9 12.0	7 18.9	2 5.8
Dec. 0	9 29.2	10 10.3	2 20.7	1 17.3	9 27.4	9 12.8	7 21.0	2 4.2
<b>2002</b>								
Jan. 0	10 22.1	11 3.1	2 17.2	1 14.9	9 28.6	9 13.6	7 21.9	2 2.6
Feb. 0	11 14.7	11 25.5	2 13.3	1 13.7	10 0.2	9 14.9	7 22.9	2 0.9
Mar. 0	0 4.9	0 15.5	2 11.3	1 14.0	10 1.8	9 15.9	7 23.4	1 29.4
Apr. 0	0 26.7	1 7.1	2 13.3	1 16.0	10 3.4	9 16.8	7 23.5	1 27.7
May 0	1 17.3	1 27.4	2 17.1	1 19.0	10 4.5	9 17.2	7 22.9	1 26.1
June 0	2 7.9	2 17.8	2 22.7	1 22.8	10 4.9	9 17.1	7 22.1	1 24.5
July 0	2 27.7	3 7.3	2 29.1	1 26.8	10 4.6	9 16.6	7 21.3	1 22.9
Aug. 0	3 17.6	3 27.1	3 5.9	2 0.3	10 3.6	9 15.8	7 20.8	1 21.3
Sept. 0	4 7.3	4 16.9	3 12.5	2 3.2	10 2.4	9 14.9	7 20.8	1 19.6
Oct. 0	4 26.4	5 5.9	3 18.2	2 4.6	10 1.4	9 14.4	7 21.3	1 18.0
Nov. 0	5 16.1	5 25.7	3 22.5	2 4.3	10 1.0	9 14.4	7 22.2	1 16.4
Dec. 0	6 5.3	6 15.0	3 24.3	2 2.5	10 1.3	9 14.9	7 23.2	1 14.8
Dec. 31	6 25.2	7 4.9	3 23.2	2 0.0	10 2.4	9 15.7	7 24.2	1 13.2

## 2003-2006: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2003							
Jan. 0	Tues.	8 15 14	7 5 59	2-68	20-719	d 42-5	d 350-9
Feb. 0	Fri.	9 16 47	8 24 27	6-63	28-212	73-5	381-9
Mar. 0	Fri.	10 15 5	9 3 24	7-12	26-657	101-5	409-9
Apr. 0	Mon.	11 15 58	10 21 52	10-87	28-149	16-6	446-9
May 0	Wed.	0 15 21	11 27 9	13-53	28-626	46-3	470-9
June 0	Sat.	1 15 15	1 15 37	17-28	0-119	77-6	501-9
July 0	Mon.	2 13 55	2 20 55	19-95	0-596	107-6	531-9
Aug. 0	Thur.	3 13 30	4 9 23	23-70	2-089	22-8	562-9
Sept. 0	Sun.	4 13 17	5 27 51	27-45	3-582	53-8	10-0
Oct. 0	Tues.	5 12 31	7 3 8	0-11	4-058	83-8	40-0
Nov. 0	Fri.	6 13 14	8 21 36	3-86	5-551	114-8	71-0
Dec. 0	Sun.	7 13 26	9 26 54	6-52	6-028	28-9	101-0
2004							
Jan. 0	Wed.	8 14 58	11 15 22	10-28	7-521	59-9	132-0
Feb. 0	Sat.	9 16 32	1 3 50	14-03	9-014	90-9	163-0
Mar. 0	Sun.	10 15 50	1 25 57	15-60	8-475	4-0	192-0
Apr. 0	Wed.	11 16 42	3 14 25	19-35	9-967	3-0	223-0
May 0	Fri.	0 16 4	4 19 42	22-01	10-444	65-0	253-0
June 0	Mon.	1 15 58	6 8 10	25-77	11-937	96-0	284-0
July 0	Wed.	2 14 37	7 13 28	28-43	12-414	10-1	314-0
Aug. 0	Sat.	3 14 13	9 1 55	2-18	13-907	41-1	345-0
Sept. 0	Tues.	4 14 1	10 20 24	5-93	15-399	72-1	376-0
Oct. 0	Thur.	5 13 15	11 25 41	8-59	17-876	102-1	406-0
Nov. 0	Sun.	6 13 59	1 14 9	12-34	17-369	17-3	437-0
Dec. 0	Tues.	7 14 12	2 19 27	15-01	17-846	47-3	467-0
2005							
Jan. 0	Fri.	8 15 43	4 7 55	18-76	19-339	78-3	498-0
Feb. 0	Mon.	9 17 17	5 26 23	22-51	20-831	109-3	529-0
Mar. 0	Mon.	10 15 24	6 5 19	22-49	19-277	21-4	557-0
Apr. 0	Thur.	11 16 27	7 23 47	26-75	20 769	52-4	4-1
May 0	Sat.	0 15 50	8 29 4	29 41	21-246	82-4	34-1
June 0	Tues.	1 15 43	10 17 32	3-16	22-739	113-4	65-1
July 0	Thur.	2 14 23	11 22 50	5-82	23-216	27-5	95-1
Aug. 0	Sun.	3 13 58	1 11 18	9-57	24-709	58-5	1 6-1
Sept. 0	Wed.	4 13 46	2 29 46	13-32	26-201	89-5	157-1
Oct. 0	Fri.	5 13 0	4 5 3	15-99	26-678	3-6	187-1
Nov. 0	Mon.	6 13 44	5 23 31	19-74	28-171	34-6	218-1
Dec. 0	Wed.	7 13 53	6 28 49	22-40	28-648	64-6	248-1
2006							
Jan. 0	Sat.	8 15 28	8 17 17	26-15	0-141	95-6	279-1
Feb. 0	Tues.	9 17 1	10 5 45	29-90	1-633	10-7	310-1
Mar. 0	Tues.	10 15 19	10 14 41	0-39	0-078	38-7	338-1
Apr. 0	Fri.	11 16 12	0 3 9	4 14	1-571	69-7	369-1
May 0	Sun.	0 15 35	1 8 26	6-80	2-048	99-7	399-1
June 0	Wed.	1 15 29	2 26 55	10-55	-541	14-9	430-1
July 0	Fri.	2 14 9	4 2 12	13-22	4-018	44-9	460-1
Aug. 0	Mon.	3 13 43	5 20 40	16-97	5-511	75-9	491-1
Sept. 0	Thur.	4 13 31	7 9 8	20-72	7-003	106-9	522-1
Oct. 0	Sat.	5 12 45	8 14 25	23-38	7-480	21-0	552-1
Nov. 0	Tues.	6 13 28	10 2 53	27-13	8-973	52-0	583-1
Dec. 0	Thur.	7 13 40	11 8 11	29-79	9-450	82-0	29-2
Dec. 31	Sun.	8 15 12	0 26 39	3-55	10-943	113-0	60-2



# EPHEMERIS

Planets: 2003-2006

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2003</b>								
Jan. 0	6 25.2	7 4.9	3 23.2	2 0.0	10 2.4	9 15.7	7 24.2	1 13.2
Feb. 0	7 15.1	7 24.7	3 19.6	1 28.0	10 4.0	9 17.0	7 25.2	1 11.5
Mar. 0	8 3.0	8 12.5	3 16.2	1 27.7	10 5.6	9 18.0	7 26.0	1 10.0
Apr. 0	8 22.4	9 1.6	3 14.2	1 29.0	10 7.2	9 18.9	7 26.3	1 8.4
May 0	9 10.6	9 19.1	3 15.3	2 1.6	10 8.3	9 19.2	7 26.1	1 6.8
June 0	9 27.5	10 4.3	3 18.8	2 5.1	10 8.9	9 19.1	7 25.3	1 5.2
July 0	10 9.9	10 13.4	3 23.9	2 9.0	10 8.6	9 18.4	7 24.5	1 3.6
Aug. 0	10 14.5	10 12.5	4 0.3	2 12.8	10 7.8	9 17.6	7 23.8	1 1.9
Sept. 0	10 8.3	10 5.2	4 7.1	2 16.2	10 6.6	9 16.9	7 23.5	1 0.3
Oct. 0	10 4.8	10 7.0	4 13.3	2 18.2	10 5.5	9 16.3	7 23.8	0 28.7
Nov. 0	10 12.0	10 13.6	4 19.1	2 18.7	10 5.0	9 16.2	7 24.6	0 27.1
Dec. 0	10 26.2	11 4.9	4 23.2	2 17.6	10 5.2	9 17.0	7 25.4	0 25.5
<b>2004</b>								
Jan. 0	11 14.4	11 23.7	4 25.1	2 15.3	10 6.2	9 17.8	7 26.4	0 23.9
Feb. 0	0 3.8	0 13.5	4 23.9	2 13.0	10 7.7	9 19.1	7 27.4	0 22.2
Mar. 0	0 22.5	1 2.1	4 20.7	2 11.0	10 9.3	9 20.1	7 28.2	0 20.7
Apr. 0	1 12.4	1 22.0	4 16.8	2 12.4	10 11.0	9 21.0	7 28.5	0 19.1
May 0	2 1.5	2 11.2	4 13.1	2 14.4	10 12.2	9 21.4	7 28.2	0 17.5
June 0	2 21.3	3 0.7	4 16.0	2 17.6	10 12.8	9 21.3	7 27.5	0 15.9
July 0	3 10.2	3 19.7	4 19.4	2 21.4	10 12.7	9 20.8	7 26.7	0 14.3
Aug. 0	3 29.8	4 9.3	4 24.6	2 25.3	10 11.8	9 20.0	7 26.0	0 12.6
Sept. 0	4 19.4	4 29.1	5 0.8	2 28.9	10 10.6	9 19.1	7 25.7	0 11.0
Oct. 0	5 8.7	5 18.3	5 7.3	3 1.5	10 9.6	9 18.6	7 23.0	0 9.4
Nov. 0	5 29.0	6 8.9	5 13.8	3 2.8	10 8.9	9 18.6	7 26.8	0 7.7
Dec. 0	6 18.8	6 29.0	5 19.2	3 2.4	10 9.1	9 19.1	7 27.6	0 6.2
<b>2005</b>								
Jan. 0	7 9.8	7 20.2	5 23.4	3 0.5	10 10.0	9 20.0	7 28.6	0 4.5
Feb. 0	8 1.3	8 11.9	5 25.1	2 28.0	10 11.5	9 21.0	7 29.6	0 2.9
Mar. 0	8 21.1	9 1.8	5 24.1	2 26.4	10 13.1	9 22.1	8 0.4	0 1.4
Apr. 0	9 13.3	9 24.1	5 20.6	2 26.0	10 14.7	9 23.1	8 0.6	11 29.7
May 0	10 5.1	10 15.9	5 17.1	2 27.4	10 16.0	9 23.6	8 0.4	11 28.2
June 0	10 27.2	11 7.7	5 15.1	3 0.1	10 16.7	9 23.6	7 29.6	11 26.5
July 0	11 17.9	11 27.6	5 16.0	3 3.6	10 16.7	9 23.2	7 28.8	11 24.9
Aug. 0	0 7.2	0 15.2	5 19.3	3 7.4	10 15.9	9 22.4	7 28.2	11 23.3
Sept. 0	0 2.3	0 26.8	5 24.6	3 11.4	10 14.8	9 21.6	7 27.8	11 21.7
Oct. 0	0 28.7	0 27.4	6 0.6	3 14.4	10 13.6	9 21.0	7 28.1	11 20.1
Nov. 0	0 22.7	0 17.5	6 7.3	3 16.4	10 12.9	9 20.9	7 28.9	11 18.4
Dec. 0	0 14.3	0 13.9	6 13.6	3 16.8	10 13.0	9 21.3	7 29.8	11 16.8
<b>2006</b>								
Jan. 0	0 16.4	0 21.2	6 19.4	3 15.5	10 13.8	9 22.1	8 0.8	11 15.2
Feb. 0	0 27.7	1 4.6	6 23.5	3 13.3	10 15.2	9 23.1	8 1.8	11 13.5
Mar. 0	1 11.2	1 19.3	6 25.1	3 11.1	10 16.8	9 24.2	8 2.5	11 12.0
Apr. 0	1 28.2	2 6.8	6 24.0	3 10.0	10 18.5	9 25.2	8 2.8	11 10.3
May 0	2 15.6	2 24.6	6 20.8	3 10.5	10 19.8	9 25.7	8 2.6	11 8.8
June 0	3 4.1	3 13.1	6 17.0	3 12.6	10 20.6	9 25.8	8 1.8	11 7.1
July 0	3 22.2	4 1.5	6 15.2	3 15.7	10 20.7	9 25.4	8 1.0	11 5.5
Aug. 0	4 11.5	4 20.8	6 16.0	3 19.5	10 20.0	9 24.6	8 0.4	11 3.9
Sept. 0	5 1.0	5 10.7	6 19.5	3 23.5	10 18.9	9 23.8	8 0.1	11 2.2
Oct. 0	5 20.5	6 0.5	6 24.5	3 26.9	10 17.7	9 23.2	8 0.4	11 0.7
Nov. 0	6 11.2	6 21.4	7 1.0	3 29.5	1 16.9	9 23.0	8 1.1	10 29.0
Dec. 0	7 1.8	7 12.3	7 7.6	4 0.6	10 16.9	9 23.4	8 2.0	10 27.5
Dec. 31	7 23.8	8 4.7	7 14.3	4 0.0	10 17.6	9 24.2	8 2.9	10 25.8

## 2007-2010: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2007							
Jan. 0	Sun.	8 15 12	0 26 39	3-55	10-943	d	d
Feb. 0	Wed.	9 16 46	2 15 7	7-30	12-435	113-0	60-2
Mar. 0	Wed.	10 15 3	2 4 3	7-74	10-880	28-1	91-2
Apr. 0	Sat.	11 15 57	4 12 31	11-53	12-373	56-1	119-2
May 0	Mon.	0 15 20	5 17 50	14-20	12-850	87-1	150-2
June 0	Thur.	1 15 14	7 6 17	17-95	14-343	1-2	180-2
July 0	Sat.	2 13 54	8 11 34	20-61	14-820	32-2	211-2
Aug. 0	Tues.	3 13 29	10 0 2	24-36	16-312	62-2	241-2
Sept. 0	Fri.	4 13 16	11 18 30	28-11	17 805	93-2	272-2
Oct. 0	Sun.	5 12 30	0 23 48	0-77	18-282	8-4	303-2
Nov. 0	Wed.	6 13 13	2 12 16	4-53	19-775	38-4	333-2
Dec. 0	Fri.	7 13 25	3 17 33	7-19	20-252	69-4	364-2
2008							
Jan. 0	Mon.	8 14 56	5 6 1	10-94	21-745	99-4	394-2
Feb. 0	Thur.	9 16 30	6 24 29	14-69	24-237	14-5	425-2
Mar. 0	Fri.	10 15 48	7 16 36	16-26	22-608	45-5	456-2
Apr. 0	Mon.	11 16 41	9 5 4	20-02	24 191	74-5	485-2
May 0	Wed.	0 16 3	10 10 21	22-68	24-668	105-5	516-2
June 0	Sat	1 15 57	11 28 49	26-43	26-161	19-6	546-2
July 0	Mon.	2 14 36	1 4 7	29-09	26 638	50-6	577-2
Aug. 0	Thur.	3 14 11	2 22 35	2-84	28-130	80-6	23-3
Sept. 0	Sun.	4 13 59	4 11 3	6-53	29-6 3	111-6	54-3
Oct. 0	Tues.	5 13 14	5 16 20	9-26	0 100	26-7	85-3
Nov. 0	Fri.	6 13 57	7 4 48	13-01	1-593	56-7	115-3
Dec. 0	Sun.	7 14 10	8 10 6	15-67	2-070	87-7	146-3
2009							
Jan. 0	Wed.	8 15 42	9 28 34	19-42	3-562	1-8	176-3
Feb. 0	Sat.	9 17 15	11 17 2	23-17	5-055	32-8	207-3
Mar. 0	Sat.	10 15 33	11 25 58	23-66	3-500	63-8	238-3
Apr. 0	Tues.	11 16 25	1 14 26	27-41	4-993	91-8	266-3
May 0	Thur.	0 15 48	2 19 44	0-07	5-470	7-0	597-3
June 0	Sun.	1 15 42	4 8 12	3-82	6-063	37-0	327-3
July 0	Tues.	2 14 22	5 13 29	6-48	7-440	68-0	358-3
Aug. 0	Fri.	3 13 57	7 1 57	10-24	8-932	98-0	388-3
Sept. 0	Mon.	4 13 44	8 20 25	13-99	10-425	13-1	4-9-3
Oct. 0	Wed.	5 13 58	9 25 43	16-65	10-902	44-1	450-3
Nov. 0	Sat.	6 13 42	11 14 11	20-40	12-395	74-1	480-3
Dec. 0	Mon.	7 13 55	0 19 28	23-06	12-872	105-1	511-3
2010							
Jan. 0	Thur.	8 15 26	2 7 56	26-81	14-364	19-2	541-3
Feb. 0	Sun.	9 17 0	3 26 24	0-57	15-857	50-2	572-3
Mar. 0	Sun.	10 15 17	4 5 21	1-05	14-302	81-2	19-3
Apr. 0	Wed.	11 16 10	5 23 49	4-80	15-795	109-2	47-3
May 0	Fri.	0 15 33	6 29 6	7-46	16-272	24-3	78-3
June 0	Mon.	1 15 27	8 17 34	11-22	17-765	54-3	108-3
July 0	Wed.	2 14 7	9 22 51	13-88	18-241	85-3	139-3
Aug. 0	Sat.	3 13 42	11 11 20	17-63	19-734	115-3	169-3
Sept. 0	Tues.	4 13 29	0 29 48	21-38	21-227	30-5	200-3
Oct. 0	Thur	5 12 43	2 5 5	24-04	21-704	61-5	331-3
Nov. 0	Sun.	6 13 27	3 23 33	27-79	23-197	91-5	261-3
Dec. 0	Tues.	7 13 39	4 28 50	0-46	23-674	6-6	292-3
Dec. 31	Fri.	8 13 10	6 17 19	4-21	25-168	36-6	322-3
						67-6	353-2

# EPHEMERIS

Planets : 2007-2010

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2007</b>								
Jan. 0	8 23.8	8 4.7	7 14.3	4 0.0	10 17.6	9 24.2	8 2.9	10 25.8
Feb. 0	8 16.5	8 27.6	7 20.1	3 28.0	10 18.9	9 25.3	8 3.9	10 24.1
Mar. 0	9 7.4	9 18.7	7 23.9	3 25.8	10 20.5	9 26.4	8 4.7	10 22.6
Apr. 0	10 1.1	10 12.5	7 25.9	3 24.1	10 22.2	9 27.4	8 5.0	10 21.0
May 0	10 24.0	11 5.4	7 25.2	3 23.8	10 23.6	9 27.9	8 4.8	10 19.4
June 0	11 17.6	11 28.6	7 21.9	3 25.3	10 24.5	9 27.9	8 4.0	10 17.8
July 0	0 9.6	0 20.2	7 18.3	3 27.9	10 24.7	9 27.5	8 3.2	10 16.2
Aug. 0	1 1.1	1 11.0	7 16.3	4 1.5	10 24.1	9 26.7	8 2.5	10 14.5
Sept. 0	1 20.7	1 29.2	7 17.1	4 5.4	10 23.0	9 25.9	8 2.3	10 12.9
Oct. 0	2 6.4	2 12.5	7 20.3	4 9.0	10 21.8	9 25.3	8 2.5	10 11.3
Nov. 0	2 16.9	2 18.4	7 25.7	4 12.1	10 21.0	9 25.2	8 3.2	10 9.7
Dec. 0	2 17.0	2 12.5	8 1.0	4 13.8	10 20.8	9 25.6	8 4.0	10 8.1
<b>2008</b>								
Jan. 0	2 6.2	2 1.7	8 9.3	4 14.0	10 21.4	9 26.3	8 4.8	10 6.4
Feb. 0	2 0.1	2 1.5	8 16.0	4 12.6	10 22.7	9 27.4	8 5.8	10 4.8
Mar. 0	2 4.8	2 9.9	8 21.6	4 10.3	10 24.2	9 28.5	8 6.6	10 3.3
Apr. 0	2 16.6	2 23.5	8 26.3	4 8.2	10 26.0	9 29.5	8 6.9	10 1.7
May 0	3 1.1	3 9.0	8 28.5	4 7.3	10 27.4	10 0.0	8 6.7	10 0.1
June 0	3 17.9	3 26.6	8 27.9	4 8.0	10 28.4	10 0.1	8 5.9	9 28.4
July 0	4 5.4	4 14.3	8 24.9	4 10.0	10 28.6	9 29.7	8 5.1	9 26.8
Aug. 0	4 24.1	5 3.4	8 21.1	4 13.3	10 28.1	9 28.9	8 4.5	9 25.2
Sept. 0	5 13.8	5 23.5	8 18.8	4 17.1	10 27.1	9 28.1	8 4.2	9 23.5
Oct. 0	6 3.4	6 13.5	8 19.6	4 20.8	10 25.9	9 27.5	8 4.1	9 21.9
Nov. 0	6 24.5	7 5.2	8 22.9	4 24.1	10 25.0	9 27.3	8 5.2	9 20.3
Dec. 0	7 16.0	7 26.9	8 28.2	4 26.7	10 24.7	9 27.7	8 6.1	9 18.7
<b>2009</b>								
Jan. 0	8 8.8	8 20.1	9 5.0	4 27.4	10 25.2	9 28.4	8 6.9	9 17.1
Feb. 0	9 2.3	9 14.0	9 12.2	4 26.5	10 26.4	9 29.5	8 7.9	9 15.5
Mar. 0	9 24.1	10 5.9	9 18.7	4 24.6	10 27.9	10 0.7	8 8.7	9 14.0
Apr. 0	10 18.3	11 0.0	9 25.2	4 22.3	10 29.7	10 1.7	8 9.0	9 12.3
May 0	11 11.7	11 23.2	10 0.0	4 20.7	11 1.2	10 2.3	8 8.8	9 10.7
June 0	0 5.3	0 16.4	10 2.9	4 20.7	11 2.2	10 2.4	8 8.0	9 9.1
July 0	0 27.4	1 8.0	10 2.9	4 22.1	11 2.6	10 2.1	8 7.2	9 7.5
Aug. 0	1 19.1	1 29.2	10 0.2	4 24.9	11 2.2	10 1.4	8 6.5	9 5.9
Sept. 0	2 8.2	2 18.6	9 26.2	4 28.5	11 1.2	10 0.6	8 6.3	9 4.2
Oct. 0	2 27.3	3 5.4	9 23.7	5 2.2	11 0.0	9 29.9	8 6.5	9 2.6
Nov. 0	3 13.1	3 18.9	9 23.9	5 5.8	10 29.0	9 29.7	8 7.3	9 1.0
Dec. 0	3 23.4	3 25.7	9 26.7	5 8.6	10 28.6	9 29.9	8 8.1	8 29.4
<b>2010</b>								
Jan. 0	3 25.3	3 21.7	10 2.5	5 10.1	10 29.0	10 0.6	8 8.9	8 27.7
Feb. 0	3 15.5	3 10.1	10 9.2	5 10.0	11 0.2	10 1.6	8 9.9	8 26.1
Mar. 0	3 7.3	3 6.7	10 16.0	5 8.5	11 1.6	10 2.8	8 10.7	8 24.6
Apr. 0	3 8.9	3 12.9	10 23.3	5 6.2	11 3.4	10 3.8	8 11.0	8 22.9
May 0	3 18.3	3 24.8	10 29.8	5 4.2	11 4.9	10 4.4	8 10.8	8 21.3
June 0	4 2.5	4 10.3	11 5.3	5 3.5	11 6.1	10 4.6	8 10.0	8 19.4
July 0	4 18.6	4 27.3	11 8.7	5 4.3	11 6.5	10 4.3	8 9.2	8 18.1
Aug. 0	5 6.8	5 16.1	11 9.5	5 6.4	11 6.2	10 3.6	8 8.5	8 16.5
Sept. 0	5 26.3	6 6.2	11 7.3	6 9.6	11 5.3	10 2.8	8 8.3	8 14.8
Oct. 0	6 16.3	6 26.6	11 3.4	5 13.4	11 4.1	10 2.1	8 8.5	8 13.2
Nov. 0	7 8.0	7 18.9	11 0.8	5 17.0	11 3.1	10 1.8	8 8.3	8 11.6
Dec. 0	8 0.0	8 11.3	10 29.9	5 20.2	11 2.6	10 2.0	8 10.2	8 10.0
Dec. 31	8 23.5	9 5.2	11 2.6	5 22.3	11 2.9	10 2.7	8 11.3	8 8.4

2011-2014: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2011							
Jan. 0	Fri.	8 15 10	6 17 19	4:21	25:166	67:6	353:2
Feb. 0	Mon.	9 16 44	8 5 47	7:96	26:659	98:6	384:2
Mar. 0	Mon.	10 15 2	8 14 43	8:44	25:104	10:7	412:2
Apr. 0	Thur.	11 15 56	10 3 11	12:20	26:597	41:7	443:2
May 0	Sat.	0 15 18	11 8 28	14:86	27:074	71:7	473:2
June 0	Tues.	1 15 13	0 26 56	18 61	28:567	102:7	504:2
July 0	Thur.	2 13 52	2 2 14	21:27	29:043	16:8	534:2
Aug. 0	Sun.	3 13 27	3 20 42	25:02	0:536	47:8	565:2
Sept. 0	Wed.	4 13 15	5 9 10	28:77	2:029	78:8	12:3
Oct. 0	Fri.	5 12 28	6 14 27	1:44	2:506	108:8	42:3
Nov. 0	Mon.	6 13 11	8 2 55	5:19	3:999	23:9	73:3
Dec. 0	Wed.	7 13 23	9 8 13	7:85	4:475	53:9	103:3
2012							
Jan. 0	Sat.	8 14 57	10 26 41	11:60	5:968	84:9	134:3
Feb. 0	Tues.	9 16 28	0 15 9	15:35	7:461	0:1	165:3
Mar. 0	Wed.	10 15 46	1 7 16	16:33	6:922	29:1	194:3
Apr. 0	Sat.	11 16 39	2 25 44	20:08	8:415	60:1	225:3
May 0	Mon.	0 16 2	4 1 1	23:34	8:892	90:1	255:3
June 0	Thur.	1 15 55	5 19 29	27:09	10:384	5:2	286:3
July 0	Sat.	2 14 35	6 24 47	29:75	10:861	35:2	316:3
Aug. 0	Tues.	3 14 10	8 13 15	3:51	12:354	66:2	347:3
Sept. 0	Fri.	4 13 58	10 1 43	7:26	13:847	97:2	378:3
Oct. 0	Sun.	5 13 12	11 7 0	9:92	14:324	11:3	408:3
Nov. 0	Wed.	6 13 56	0 25 28	13:67	15:816	42:3	439:3
Dec. 0	Fri.	7 14 9	2 0 46	16:33	16:293	72:3	469:3
2013							
Jan. 0	Mon.	8 15 40	3 19 14	20:08	17:786	103:3	500:3
Feb. 0	Thur.	9 17 14	5 7 42	23:83	19:279	18:4	531:3
Mar. 0	Thur.	10 15 31	5 16 38	24:32	17:724	46:4	559:3
Apr. 0	Sun.	11 16 24	7 5 6	28:07	19:217	77:4	6:4
May 0	Tues.	0 15 47	8 10 23	0:73	19:694	107:4	36:4
June 0	Fri.	1 15 41	9 28 51	4:49	21:186	22:5	67:4
July 0	Sun.	2 14 20	11 4 9	7:15	21:663	52:5	97:4
Aug. 0	Wed.	3 13 55	0 22 37	10:90	23:156	83:5	128:4
Sept. 0	Sat.	4 13 43	2 11 5	14:65	24:649	114:5	159:4
Oct. 0	Mon.	5 12 57	3 16 22	17:31	25:126	28:6	189:4
Nov. 0	Thur.	6 13 41	5 4 50	21:06	26:618	53:6	220:4
Dec. 0	Sat.	7 13 53	6 10 8	23:73	27:095	89:6	250:4
2014							
Jan. 0	Tues.	8 15 24	7 28 36	27:48	28 588	4:8	281:4
Feb. 0	Fri.	9 16 58	9 17 4	1:23	0:081	35:8	312:4
Mar. 0	Fri.	10 15 16	9 26 0	5:71	28:526	63:8	340:4
Apr. 0	Mon.	11 16 9	11 14 28	9:47	0:019	94:8	371:4
May 0	Wed.	0 15 32	0 19 46	8:13	0:496	8:9	401:4
June 0	Sat.	1 15 26	2 8 14	11:88	1:988	39:9	432:4
July 0	Mon.	2 14 6	3 13 31	14:54	2:465	69:9	462:4
Aug. 0	Thur.	3 13 41	5 1 59	18:29	3:958	100:9	493:4
Sept. 0	Sun.	4 13 28	6 20 27	22:04	5:451	16:1	524:4
Oct. 0	Tues.	5 12 42	7 25 45	24:71	5:928	46:1	554:4
Nov. 0	Fri.	6 13 25	9 14 13	28:46	7:420	77:1	1:5
Dec. 0	Sun.	7 13 37	10 19 30	1:12	7:897	107:1	81:5
Dec. 31	Wed.	8 15 9	0 7 58	4:87	9:390	22:2	62:5

# EPHEMERIS

Planets: 2011-2014

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2011</b>								
Jan. 0	8 23.5	8 5.2	11 2.6	5 22.3	11 2.9	10 2.7	8 11.3	8 8.4
Feb. 0	9 17.7	9 29.5	11 7.6	5 22.8	11 3.9	10 3.7	8 12.3	8 6.7
Mar. 0	10 9.8	10 21.6	11 13.7	5 21.9	11 5.4	10 5.0	8 13.1	8 5.2
Apr. 0	11 4.2	11 15.9	11 21.1	5 19.8	11 7.1	10 6.0	8 13.5	8 3.6
May 0	11 27.1	0 9.0	11 28.3	5 17.7	11 8.7	10 6.7	8 13.6	8 2.0
June 0	0 20.7	1 1.6	0 5.2	5 16.2	11 9.9	10 6.9	8 13.1	8 0.4
July 0	1 12.3	1 22.9	0 10.9	5 16.4	11 10.4	10 6.6	8 12.3	7 28.8
Aug. 0	2 3.8	2 13.9	0 15.0	5 17.9	11 10.3	10 5.9	8 11.5	7 27.1
Sept. 0	2 24.1	3 3.7	0 16.5	5 20.8	11 9.4	10 5.1	8 11.1	7 25.5
Oct. 0	3 12.7	3 21.5	0 14.9	5 24.2	11 8.2	10 4.4	8 11.1	7 23.9
Nov. 0	4 0.4	4 8.1	0 11.2	5 28.0	11 7.1	10 4.1	8 11.5	7 22.2
Dec. 0	4 15.2	4 21.2	0 7.6	6 1.4	11 6.6	10 4.3	8 12.3	7 20.7
<b>2012</b>								
Jan. 0	4 26.2	4 28.8	0 6.5	6 3.9	11 6.8	10 4.9	8 13.2	7 19.0
Feb. 0	4 29.0	4 26.3	0 8.7	6 5.2	11 7.7	10 5.9	8 14.2	7 17.4
Mar. 0	4 21.4	4 15.6	0 13.0	6 4.7	11 9.1	10 7.1	8 15.1	7 15.9
Apr. 0	4 11.1	4 10.1	0 19.2	6 3.0	11 10.9	10 8.1	8 15.5	7 14.2
May 0	4 11.5	4 15.1	0 26.2	6 0.8	11 12.5	10 8.8	8 15.6	7 12.7
June 0	4 20.6	4 27.0	1 3.4	5 29.0	11 13.8	10 9.1	8 15.0	7 11.0
July 0	5 4.3	5 12.4	1 10.1	5 28.5	11 14.4	10 8.8	8 14.2	7 9.4
Aug. 0	5 21.6	6 0.7	1 16.2	5 29.5	11 14.3	10 8.2	8 13.5	7 7.8
Sept. 0	6 10.8	6 20.7	1 20.1	6 1.9	11 13.5	10 7.7	8 13.0	7 6.1
Oct. 0	7 1.0	7 11.2	1 22.5	6 5.1	11 12.3	10 6.6	8 13.0	7 4.5
Nov. 0	7 23.2	8 4.3	1 21.3	6 8.8	11 11.2	10 6.2	8 13.4	7 2.9
Dec. 0	8 15.7	8 27.3	1 17.8	6 12.3	11 10.6	10 6.4	8 14.2	7 1.3
<b>2013</b>								
Jan. 0	9 9.7	9 21.5	1 13.9	6 15.2	11 10.7	10 7.0	8 15.2	6 29.7
Feb. 0	10 4.2	10 16.1	1 12.4	6 16.9	11 11.6	10 8.0	8 16.2	6 28.0
Mar. 0	10 26.3	11 8.0	1 13.9	6 17.2	11 12.9	10 9.3	8 17.1	6 26.5
Apr. 0	11 20.3	0 1.7	1 17.8	6 15.9	11 14.6	10 10.3	8 17.5	6 24.9
May 0	0 13.1	0 21.1	1 23.4	6 13.8	11 16.3	10 11.1	8 17.6	6 23.3
June 0	1 5.6	1 16.3	2 0.1	6 11.6	11 17.8	10 11.3	8 17.0	6 21.7
July 0	1 26.9	2 7.1	2 7.0	6 10.6	11 18.3	10 11.1	8 16.2	6 20.1
Aug. 0	2 17.9	2 27.7	2 13.9	6 11.0	11 18.3	10 10.4	8 15.5	6 18.4
Sept. 0	3 8.1	3 17.6	2 19.9	6 12.8	11 17.6	10 9.6	8 15.0	6 16.8
Oct. 0	3 26.9	4 9.9	2 24.3	6 15.7	11 16.5	10 8.9	8 15.0	6 15.2
Nov. 0	4 15.4	4 23.9	2 26.5	6 19.1	11 15.3	10 8.5	8 15.4	6 13.6
Dec. 0	5 2.1	5 9.6	2 25.7	6 22.8	11 14.6	10 8.7	8 16.2	6 12.0
<b>2014</b>								
Jan. 0	5 17.4	5 23.7	2 22.3	6 26.0	11 14.6	10 9.3	8 17.1	6 10.3
Feb. 0	5 29.1	6 2.5	2 18.4	6 28.3	11 15.4	10 10.2	8 18.0	6 8.7
Mar. 0	6 3.7	6 2.7	2 16.5	6 29.0	11 16.6	10 11.4	8 19.0	6 7.2
Apr. 0	5 28.3	5 22.6	2 17.4	6 28.4	11 18.3	10 12.4	8 19.5	6 5.5
May 0	5 17.7	5 15.3	2 20.9	6 26.7	11 20.0	10 13.2	8 19.6	6 3.9
June 0	5 15.8	5 19.0	2 26.2	6 24.2	11 21.4	10 13.5	8 19.0	6 2.3
July 0	5 24.1	6 0.4	3 2.5	6 22.7	11 22.2	10 13.3	8 18.1	6 0.7
Aug. 0	6 8.1	6 17.1	3 9.3	6 22.3	11 22.4	10 12.7	8 17.4	5 29.0
Sept. 0	6 27.0	7 6.7	3 16.1	6 23.7	11 21.7	10 11.9	8 16.9	5 27.4
Oct. 0	7 16.9	7 27.5	3 21.8	6 26.2	11 20.6	10 11.1	8 16.9	5 25.8
Nov. 0	8 9.1	8 20.6	3 26.3	6 29.7	11 19.4	10 10.7	8 17.3	5 24.2
Dec. 0	9 2.0	9 13.5	3 28.6	7 3.1	11 18.6	10 10.8	8 18.1	5 22.6
Dec. 31	9 26.1	10 7.8	3 27.8	7 6.6	11 18.5	10 11.4	8 19.1	5 20.9

2015-2018: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2015							
Jan. 0	Wed.	8 15 9	0 7 58	4:87	9:390	22:2	62:5
Feb. 0	Sat.	9 16 42	1 26 26	8:62	10:883	53:2	93:5
Mar. 0	Sat.	10 15 0	2 5 22	9:11	9:328	81:2	121:5
Apr. 0	Tues.	11 15 54	3 23 50	12:86	10:821	112:2	152:5
May 0	Thur.	0 15 17	4 29 8	17:52	11:297	26:3	182:5
June 0	Sun.	1 15 11	6 17 36	19:27	12:790	57:3	213:5
July 0	Tues.	2 13 51	7 23 53	21:93	13:267	87:3	243:5
Aug. 0	Fri.	3 13 26	9 11 21	25:69	14:760	2:4	274:5
Sept. 0	Mon.	4 13 13	10 29 49	29:44	16:253	33:4	305:5
Oct. 0	Wed.	5 12 27	0 5 7	2:10	18:730	63:4	335:5
Nov. 0	Sat.	6 13 10	1 23 35	5:85	18:222	94:4	366:5
Dec. 0	Mon.	7 13 22	2 28 52	8:51	18:699	8:5	396:5
2016							
Jan. 0	Thur.	8 14 53	4 17 20	12:26	20:192	39:5	427:5
Feb. 0	Sun.	9 16 27	6 5 48	16:02	21:685	70:5	458:5
Mar. 0	Mon.	10 15 45	6 27 55	17:59	21:146	99:5	487:5
Apr. 0	Thur.	11 16 38	8 16 23	21:34	22:638	14:7	518:5
May 0	Sat.	0 16 0	9 21 41	24:00	23:115	44:7	548:5
June 0	Tues.	1 15 54	11 10 9	27:75	24:608	75:7	579:5
July 0	Thur.	2 14 34	0 15 26	0:42	25:085	105:7	25:6
Aug. 0	Sun.	3 14 8	2 3 54	4:17	26:578	20:8	56:6
Sept. 0	Wed.	4 13 56	3 22 22	7:92	28:071	51:8	87:6
Oct. 0	Fri.	5 13 11	4 27 40	10:58	28:547	81:8	117:6
Nov. 0	Mon.	6 13 54	6 16 8	14:33	0:040	112:8	148:6
Dec. 0	Wed.	7 14 7	7 21 25	16:99	0:517	26:9	178:6
2017							
Jan. 0	Sat.	8 15 39	9 9 53	20:75	2:010	57:9	209:6
Feb. 0	Tues.	9 17 12	10 28 21	24:50	3:503	88:9	240:6
Mar. 0	Tues.	10 15 29	11 7 17	24:98	1:948	1:0	265:6
Apr. 0	Fri.	11 16 22	0 25 45	28:73	3:440	32:0	299:6
May 0	Sun.	0 15 45	2 1 3	1:40	3:917	62:0	329:6
June 0	Wed.	1 15 39	3 19 31	5:15	5:410	93:0	360:6
July 0	Fri.	2 14 19	4 24 48	7:81	5:887	7:2	390:6
Aug. 0	Mon.	3 13 54	6 13 16	11:56	7:380	38:2	421:6
Sept. 0	Thur.	4 13 41	8 1 44	15:31	8:872	69:2	452:6
Oct. 0	Sat.	5 12 56	9 7 2	17:98	9:349	99:2	482:6
Nov. 0	Tues.	6 13 39	10 25 30	21:73	10:842	14:3	513:6
Dec. 0	Thur.	7 13 51	0 0 47	24:39	11:319	44:3	543:6
2018							
Jan. 0	Sun.	8 15 23	1 19 15	28:14	12:812	75:3	574:6
Feb. 0	Wed.	9 16 57	3 7 43	1:89	14:305	106:3	21:6
Mar. 0	Wed.	10 15 14	3 16 40	2:38	12:750	18:4	49:6
Apr. 0	Sat.	11 16 7	5 5 8	6:13	14:242	49:4	80:6
May 0	Mon.	0 15 30	6 10 25	8:79	14:719	79:4	110:6
June 0	Thur.	1 15 24	7 28 53	12:54	16:212	110:4	141:6
July 0	Sat.	2 14 4	9 4 11	15:20	16:689	24:5	171:6
Aug. 0	Tues.	3 13 39	10 22 39	18:06	18:182	55:5	202:6
Sept. 0	Fri.	4 13 27	0 11 7	22:71	19:674	86:5	233:6
Oct. 0	Sun.	5 12 40	1 16 24	25:37	20:151	0:6	263:6
Nov. 0	Wed.	6 13 24	3 4 52	29:12	21:644	31:6	294:6
Dec. 0	Fri.	7 13 36	4 10 10	1:78	22:121	61:6	324:6
Dec. 31	Mon.	8 15 7	5 28 38	5:53	23:614	92:6	355:6

# EPHEMERIS

Planets: 2015-2018

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2015</b>								
Jan. 0	9 26.1	10 7.8	3 27.8	7 6.6	11 18.5	10 11.4	8 19.1	5 20.9
Feb. 0	10 20.4	11 2.0	3 24.6	7 9.2	11 19.2	10 12.3	8 20.0	5 19.3
Mar. 0	11 12.0	11 23.4	3 21.0	7 10.5	11 20.4	10 13.6	8 20.9	5 17.8
Apr. 0	0 5.3	0 16.5	3 18.7	7 10.4	11 22.1	10 14.6	8 21.3	5 16.2
May 0	0 27.3	1 8.0	3 19.4	7 9.0	11 23.8	10 15.5	8 21.2	5 14.6
June 0	1 19.2	1 29.6	3 22.5	7 6.7	11 25.2	10 15.8	8 20.8	5 12.9
July 0	2 9.8	2 19.8	3 27.5	7 4.9	11 26.1	10 15.7	8 20.1	5 11.3
Aug. 0	3 0.3	3 10.1	4 3.6	7 4.0	11 26.4	10 15.0	8 19.3	5 9.7
Sept. 0	3 20.3	3 29.8	4 10.3	7 4.7	11 25.8	10 14.2	8 18.8	5 8.0
Oct. 0	4 9.3	4 18.6	4 16.7	7 6.7	11 24.8	10 13.5	8 18.5	5 6.5
Nov. 0	4 28.4	5 7.5	4 22.6	7 9.8	11 23.6	10 12.9	8 19.3	5 4.8
Dec. 0	5 16.5	5 25.1	4 26.9	7 13.2	11 22.7	10 12.6	8 20.0	5 3.2
<b>2016</b>								
Jan. 0	6 4.2	6 12.3	4 29.2	7 16.8	11 22.5	10 13.6	8 20.9	5 1.6
Feb. 0	6 20.5	6 27.7	4 28.4	7 19.8	11 23.0	10 14.4	8 21.8	4 29.9
Mar. 0	7 3.6	7 9.0	4 25.1	7 21.6	11 24.2	10 15.7	8 22.7	4 28.4
Apr. 0	7 13.0	7 14.6	4 21.6	7 22.1	11 25.9	10 16.7	8 23.1	4 26.8
May 0	7 13.6	7 9.6	4 19.4	7 21.1	11 27.6	10 17.6	8 23.0	4 25.2
June 0	7 4.1	7 0.0	4 30.0	7 19.1	11 29.1	10 18.0	8 22.6	4 23.6
July 0	6 28.6	7 0.1	4 23.0	7 17.0	0 0.1	10 17.9	8 21.9	4 22.0
Aug. 0	7 4.7	7 10.9	4 27.9	7 15.7	0 0.4	10 17.4	8 21.1	4 20.4
Sept. 0	7 19.1	7 27.9	5 4.1	7 15.8	11 29.9	10 16.6	8 20.6	4 18.7
Oct. 0	8 7.4	8 17.6	5 10.5	7 17.3	11 28.9	10 15.7	8 20.6	4 17.1
Nov. 0	8 29.0	9 9.9	5 17.1	7 20.1	11 27.7	10 15.2	8 21.1	4 15.5
Dec. 0	9 21.1	10 2.4	5 22.7	7 23.4	11 26.7	10 15.2	8 21.8	4 13.9
<b>2017</b>								
Jan. 0	10 14.5	10 25.9	5 27.1	7 27.0	11 26.4	10 15.7	8 22.8	4 12.2
Feb. 0	11 7.9	11 19.0	5 29.2	8 0.3	11 26.9	10 16.5	8 23.7	4 10.6
Mar. 0	11 28.6	0 9.5	5 28.5	8 2.4	11 28.0	10 17.6	8 24.6	4 9.1
Apr. 0	0 20.9	1 1.6	5 25.3	8 3.5	11 29.6	10 18.7	8 25.0	4 7.5
May 0	1 11.8	1 22.2	5 21.5	8 3.1	0 1.3	10 19.7	8 24.9	4 6.9
June 0	2 3.0	2 12.9	5 19.4	8 1.3	0 2.9	10 20.1	8 24.5	4 4.3
July 0	2 22.7	3 2.6	5 19.9	7 29.2	0 4.0	10 20.0	8 23.8	4 2.7
Aug. 0	3 12.9	3 22.5	5 23.9	7 27.4	0 4.4	10 19.6	8 23.0	4 1.0
Sept. 0	4 2.7	4 12.2	5 27.9	7 26.9	0 4.0	10 18.8	8 22.5	3 29.4
Oct. 0	4 21.8	5 1.3	6 3.8	7 28.0	0 3.1	10 18.0	8 22.5	3 27.8
Nov. 0	5 11.3	5 20.8	6 10.6	8 0.3	0 1.9	10 17.4	8 23.0	3 26.1
Dec. 0	6 0.2	6 9.6	6 16.9	8 3.4	0 0.9	10 17.4	8 23.7	3 24.5
<b>2018</b>								
Jan. 0	6 19.6	6 29.0	6 22.9	8 7.1	0 0.4	10 17.8	8 24.6	3 22.9
Feb. 0	7 8.8	7 17.8	6 27.1	8 10.5	0 0.8	10 18.6	8 25.5	3 21.3
Mar. 0	7 25.6	8 4.3	6 29.1	8 13.0	0 1.8	10 19.7	8 26.4	3 19.8
Apr. 0	8 13.3	8 21.1	6 28.5	8 14.6	0 3.4	10 20.8	8 27.3	3 18.1
May 0	8 28.4	9 4.8	6 25.5	8 14.8	0 5.1	10 21.8	8 28.0	3 16.5
June 0	9 10.1	9 13.1	6 21.8	8 13.5	0 6.7	10 22.2	8 28.1	3 14.9
July 0	9 13.7	9 11.1	6 19.6	8 11.4	0 7.9	10 22.2	8 28.0	3 13.3
Aug. 0	9 7.0	9 3.8	6 20.0	8 9.4	0 8.4	10 21.8	8 27.2	3 11.6
Sept. 0	9 3.0	9 5.3	6 23.0	8 8.3	0 8.2	10 21.0	8 26.5	3 10.0
Oct. 0	9 10.4	9 17.2	6 28.0	8 8.7	0 7.3	10 20.2	8 25.9	3 8.4
Nov. 0	9 25.9	10 4.8	7 4.2	8 10.6	0 6.0	10 19.6	8 25.7	3 6.8
Dec. 0	10 14.3	10 24.1	7 10.8	8 13.5	0 5.0	10 19.4	8 25.9	3 5.2
Dec. 31	11 4.9	11 15.0	7 17.7	8 17.0	0 4.5	10 19.9	8 26.5	3 3.5

2019-2022: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2019							
Jan. 0	Mon.	8 15 7	5 28 38	5-53	23-614	d	d
Feb. 0	Thur.	9 16 41	7 17 8	9-29	25-116	7-8	386-6
Mar. 0	Thur.	10 14 59	7 26 2	9-77	23-552	35-8	414-6
Apr. 0	Sun.	11 15 52	9 14 30	13-52	25-044	66-8	445-6
May 0	Tues.	0 15 15	10 19 47	16-18	25-521	96-8	475-6
June 0	Fri.	1 15 10	0 8 15	19-94	27-014	11-9	506-6
July 0	Sun.	2 13 50	1 13 33	22-60	27-491	41-9	536-6
Aug. 0	Wed.	3 13 24	3 2 1	26-35	28-984	72-9	567-6
Sept. 0	Sat.	4 13 12	4 20 29	0-10	0-476	103-9	14-7
Oct. 0	Mon.	5 12 25	5 25 46	2-76	0-953	18-0	44-7
Nov. 0	Thur.	6 13 8	7 14 14	6-51	2-446	49-0	75-7
Dec. 0	Sat.	7 13 20	8 19 32	9-18	2-923	79-0	105-7
2020							
Jan. 0	Tues.	8 14 52	10 8 0	12-93	4-416	110-0	136-7
Feb. 0	Fri.	9 16 25	11 26 28	16-68	5-908	25-1	167-7
Mar. 0	Sat.	10 15 43	0 18 35	18-25	5-369	54-1	196-7
Apr. 0	Tues.	11 16 36	2 7 3	22-00	6-862	85-1	227-7
May 0	Thur.	0 15 59	3 12 20	24-67	7-339	115-1	257-7
June 0	Sun.	1 15 52	5 0 48	28-42	8-832	30-3	288-7
July 0	Tues.	2 14 32	6 6 6	1-08	9-309	60-3	318-7
Aug. 0	Fri.	3 14 7	7 24 34	4-83	10-801	91-3	349-7
Sept. 0	Mon.	4 13 55	9 13 2	8-58	12-294	6-4	380-7
Oct. 0	Wed.	5 13 9	10 18 19	11-24	12-771	36-4	410-7
Nov. 0	Sat.	6 13 53	0 6 47	15-00	14-264	67-4	441-7
Dec. 0	Mon.	7 14 5	1 12 5	17-66	14-741	97-4	471-7
2021							
Jan. 0	Thur.	8 15 37	3 0 33	21-41	16-234	12-5	502-7
Feb. 0	Sun.	9 17 11	4 19 1	25-16	17-726	43-5	533-7
Mar. 0	Sun.	10 15 28	4 27 57	25-65	16-171	71-5	561-7
Apr. 0	Wed.	11 16 21	6 16 25	29-40	17-664	102-5	8-8
May 0	Fri.	0 15 44	7 21 42	2-06	18-141	16-6	38-8
June 0	Mon.	1 15 38	9 10 11	5-81	19-634	47-6	69-8
July 0	Wed.	2 14 17	10 15 28	8-47	20-111	77-6	99-8
Aug. 0	Sat.	3 13 52	0 3 56	12-22	21-603	108-6	130-8
Sept. 0	Tues.	4 13 40	1 22 24	15-98	23-096	23-7	161-8
Oct. 0	Thur.	5 12 54	2 27 41	18-64	23-573	53-7	191-8
Nov. 0	Sun.	6 13 38	4 16 9	22-39	25-066	84-7	222-8
Dec. 0	Tues.	7 13 50	5 21 27	25-05	25-543	114-7	252-8
2022							
Jan. 0	Fri.	8 15 21	7 9 55	28-80	27-035	29-9	283-8
Feb. 0	Mon.	9 16 55	8 28 23	2-55	28-528	60-9	314-8
Mar. 0	Mon.	10 15 12	9 7 19	3-04	26-973	88-9	345-8
Apr. 0	Thur.	11 16 6	10 25 47	6-79	28-466	4-0	373-8
May 0	Sat.	0 15 29	0 1 5	9-45	28-943	34-0	403-8
June 0	Tues.	1 15 23	1 19 33	13-20	0-436	65-0	434-8
July 0	Thur.	2 14 3	2 24 50	15-87	0-913	95-0	464-8
Aug. 0	Sun.	3 13 38	4 13 18	19-62	2-405	10-1	495-8
Sept. 0	Wed.	4 13 25	6 1 46	23-37	3-898	41-1	526-8
Oct. 0	Fri.	5 12 39	7 7 4	26-03	4-375	71-1	556-8
Nov. 0	Mon.	6 13 22	8 25 32	29-78	5-868	102-1	5-9
Dec. 0	Wed.	7 13 35	10 0 49	2-45	6-345	16-2	33-9
Dec. 31	Sat.	8 15 6	11 19 17	6-20	7-837	47-2	64-9



# EPHEMERIS

Planets : 2019-2022

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2019</b>								
Jan. 0	11 49	11 150	7 177	8 170	0 45	10 199	8 265	3 35
Feb. 0	11 260	0 61	7 237	8 206	0 48	10 207	8 273	3 19
Mar. 0	0 150	0 250	7 282	8 234	0 57	10 218	8 282	3 04
Apr. 0	1 58	1 157	8 04	8 255	0 72	10 230	8 291	2 287
May 0	1 256	2 54	7 298	8 262	0 89	10 240	8 298	2 272
June 0	2 156	2 253	7 269	8 255	0 106	10 245	9 00	2 255
July 0	3 49	3 144	7 231	8 235	0 118	10 245	8 298	2 239
Aug. 0	3 246	4 41	7 208	8 214	0 124	10 241	8 290	2 223
Sept. 0	4 143	4 239	7 211	8 199	0 123	10 233	8 283	2 206
Oct. 0	5 35	5 131	7 240	8 197	0 115	10 225	8 277	2 190
Nov. 0	5 235	6 32	7 292	8 211	0 103	10 219	8 275	2 174
Dec. 0	6 131	6 232	8 54	8 236	0 92	10 218	8 277	2 158
<b>2020</b>								
Jan. 0	7 37	7 138	8 125	8 270	0 85	10 222	8 282	2 142
Feb. 0	7 247	8 49	8 195	9 07	0 87	10 229	8 291	2 125
Mar. 0	8 145	8 248	8 254	9 38	0 96	10 240	9 00	2 110
Apr. 0	9 58	9 162	9 03	9 63	0 111	10 251	9 09	2 94
May 0	9 265	10 68	9 27	9 76	0 128	10 261	9 16	2 78
June 0	10 175	10 272	9 28	9 73	0 145	10 266	9 18	2 62
July 0	11 65	11 150	9 02	9 58	0 157	10 267	9 16	2 46
Aug. 0	11 229	11 287	8 263	9 36	0 165	10 263	9 08	2 29
Sept. 0	0 21	0 23	8 237	9 17	0 164	10 255	9 02	2 13
Oct. 0	11 295	11 250	8 239	9 10	0 157	10 247	8 295	1 297
Nov. 0	11 211	11 201	8 269	9 19	0 145	10 241	8 293	1 281
Dec. 0	11 220	11 262	9 20	9 40	0 133	10 239	8 294	1 265
<b>2021</b>								
Jan. 0	0 25	0 95	9 86	9 72	0 126	10 243	8 299	1 248
Feb. 0	0 178	0 261	9 160	9 109	0 127	10 250	9 09	1 232
Mar. 0	1 35	1 123	9 224	9 141	0 135	10 262	9 18	1 217
Apr. 0	1 218	2 09	9 290	9 170	0 149	10 274	9 27	1 201
May 0	2 100	2 192	10 42	9 188	0 166	10 284	9 34	1 185
June 0	2 290	3 83	10 75	9 191	0 183	10 290	9 36	1 168
July 0	3 175	3 269	10 80	9 181	0 197	10 291	9 34	1 152
Aug. 0	4 69	4 163	10 58	9 160	0 205	10 288	9 26	1 136
Sept. 0	4 265	5 61	10 18	9 138	0 205	10 281	9 20	1 119
Oct. 0	5 159	5 257	9 289	9 126	0 199	10 273	9 14	1 103
Nov. 0	6 63	6 164	9 286	9 129	0 187	10 266	9 11	1 87
Dec. 0	6 267	7 71	10 13	9 146	0 175	10 264	9 12	1 71
<b>2022</b>								
Jan. 0	7 183	7 290	10 63	9 175	0 167	10 266	9 16	1 55
Feb. 0	8 106	8 215	10 130	9 211	0 167	10 273	9 27	1 38
Mar. 0	9 11	9 123	10 197	9 244	0 174	10 283	9 35	1 23
Apr. 0	9 243	10 56	10 271	9 276	0 187	10 295	9 44	1 07
May 0	10 169	10 262	11 37	9 299	0 204	11 05	9 51	0 291
June 0	11 102	11 212	11 96	10 09	0 222	11 11	9 52	0 274
July 0	0 20	0 124	11 134	10 04	0 236	11 13	9 51	0 258
Aug. 0	0 231	1 25	11 147	9 286	0 245	11 10	9 43	0 242
Sept. 0	1 117	1 193	11 129	9 263	0 247	11 03	9 37	0 225
Oct. 0	1 254	1 296	11 93	9 246	0 241	10 295	9 30	0 210
Nov. 0	2 12	1 294	11 57	9 243	0 230	10 288	9 28	0 193
Dec. 0	1 247	1 191	11 49	9 254	0 218	10 285	9 30	0 177
Dec. 31	1 148	1 139	11 70	9 280	0 209	10 287	9 34	0 161

## 2023-2026: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2023							
Jan. 0	Sat.	8 15 6	11 19 17	6:20	7:837	d 47:2	d 64:9
Feb. 0	Tues.	9 16 39	1 7 45	9:95	9 330	78:2	95:9
Mar. 0	Tues.	10 14 57	1 16 42	10:43	7:775	106:2	123:9
Apr. 0	Fri.	11 15 50	3 5 10	14:18	9:268	21:4	154:9
May 0	Sun.	0 15 14	4 10 27	16:85	9:745	51:4	184:9
June 0	Wed.	1 15 8	5 28 55	10:60	11:238	82:4	215:9
July 0	Fri.	2 13 48	7 4 13	23:26	11:715	112:4	245:9
Aug. 0	Mon.	3 13 23	8 22 40	27:01	13:207	27:5	276:9
Sept. 0	Thur.	4 13 10	10 11 9	0:76	14:700	58:5	307:9
Oct. 0	Sat.	5 12 24	11 16 26	3:43	15:177	89:5	337:9
Nov. 0	Tues.	6 13 7	1 4 54	7:18	16:670	3:6	368:9
Dec. 0	Thur.	7 13 19	2 10 11	9:84	17:147	33:6	398:9
2024							
Jan. 0	Sun.	8 14 50	3 28 39	13:59	18:639	64:6	429:9
Feb. 0	Wed.	9 16 24	5 17 7	17:34	20:132	95:6	460:9
Mar. 0	Thur.	10 15 42	6 9 14	18:92	19:591	8:7	489:9
Apr. 0	Sun.	11 16 35	7 27 42	22:67	21:086	39:7	520:9
May 0	Tues.	0 15 57	9 3 0	25:33	21:563	69:7	550:9
June 0	Fri.	1 15 51	10 21 28	29:08	23:056	100:7	581:9
July 0	Sun.	2 14 31	11 26 45	1:74	23:532	14:8	28:0
Aug. 0	Wed.	3 14 6	1 15 13	5:49	25:025	45:8	59:0
Sept. 0	Sat.	4 13 53	3 3 41	9:25	26:518	76:8	90:0
Oct. 0	Mon.	5 13 8	4 8 59	11:91	26:995	106:8	120:0
Nov. 0	Thur.	6 13 51	5 27 27	15:66	28:483	22:0	151:0
Dec. 0	Sat.	7 14 4	7 2 44	18:32	28:964	52:0	181:0
2025							
Jan. 0	Tues.	8 15 35	8 21 12	22:07	0:457	83:0	212:0
Feb. 0	Fri.	9 17 9	10 9 40	25:82	1:950	114:0	243:0
Mar. 0	Fri.	10 15 26	10 18 37	26:31	0:395	26:1	271:0
Apr. 0	Mon.	11 16 19	0 7 5	0:06	1:888	57:1	302:0
May 0	Wed.	0 15 42	1 12 22	2:72	2:365	87:1	332:0
June 0	Sat.	1 15 36	3 0 50	6:47	3:857	2:2	363:0
July 0	Mon.	2 14 16	4 6 8	9:14	4:334	32:2	393:0
Aug. 0	Thur.	3 13 51	5 24 36	12:89	5:827	63:2	424:0
Sept. 0	Sun.	4 13 39	7 13 4	16:64	7:320	94:2	455:0
Oct. 0	Tues.	5 12 53	8 18 21	19:30	7:797	8:3	485:0
Nov. 0	Fri.	6 13 36	10 6 49	23:05	9:90	39:3	516:0
Dec. 0	Sun.	7 13 48	11 12 7	25:71	9:766	69:3	546:0
2026							
Jan. 0	Wed.	8 15 20	1 0 35	29:47	11:259	100:3	577:0
Feb. 0	Sat.	9 16 53	2 19 3	3:22	12:752	15:5	24:0
Mar. 0	Sat.	10 15 11	2 27 59	3:70	11:197	43:5	52:0
Apr. 0	Tues.	11 16 4	4 16 27	7:45	12:690	74:5	83:0
May 0	Thur	0 15 27	5 21 44	10:12	13:167	104:5	113:0
June 0	Sun.	1 15 21	7 10 12	13:87	14:659	19:6	144:0
July 0	Tues.	2 14 1	8 15 30	16:53	15:136	49:6	174:0
Aug. 0	Fri.	3 13 36	10 3 8	20:28	16:629	80:6	205:0
Sept. 0	Mon.	4 13 24	11 22 26	24:03	18:122	111:6	236:0
Oct. 0	Wed.	5 12 37	0 27 43	26:69	18:599	25:7	266:0
Nov. 0	Sat.	6 13 21	2 16 11	0:45	20:091	56:7	297:3
Dec. 0	Mon.	7 13 33	3 21 29	3:11	20:568	86:7	327:0
Dec. 31	Thur.	8 15 4	5 9 57	6:86	22:061	1:8	358:0

# EPHEMERIS

Planets : 2023-2026

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
2023								
Jan. 0	1 14.8	1 13.9	11 7.0	9 28.0	0 20.9	10 28.7	9 3.4	0 16.1
Feb. 0	1 15.9	1 19.9	11 11.9	10 1.3	0 20.8	10 29.4	9 4.4	0 14.5
Mar. 0	1 24.7	2 1.1	11 17.6	10 4.8	0 21.3	11 0.4	9 5.2	0 13.0
Apr. 0	2 8.7	2 16.4	11 24.9	10 8.3	0 22.6	11 1.7	9 6.0	0 11.3
May 0	2 24.5	3 2.9	0 2.2	10 11.0	0 24.3	11 2.7	9 6.8	0 9.7
June 0	3 12.1	3 20.8	0 9.2	10 12.5	0 26.0	11 3.4	9 6.9	0 8.1
July 0	3 29.8	4 8.9	0 15.1	10 12.7	0 27.5	11 3.6	9 6.7	0 6.5
Aug. 0	4 18.7	4 28.1	0 19.6	10 11.3	0 28.6	11 3.3	9 5.9	0 4.9
Sept. 0	5 8.3	5 18.7	0 21.5	10 9.1	0 23.9	11 2.6	9 5.2	0 3.2
Oct. 0	5 27.9	6 7.9	0 20.5	10 7.1	0 28.4	11 1.8	9 4.7	0 1.6
Nov. 0	6 18.8	6 29.3	0 16.9	10 6.1	0 27.3	11 1.1	9 4.6	0 0.0
Dec. 0	7 9.9	7 20.7	0 13.1	10 6.7	0 26.1	11 0.8	9 4.7	11 28.4
2024								
Jan. 0	8 2.4	8 13.6	0 11.6	10 8.8	0 25.1	11 1.0	9 5.1	11 26.7
Feb. 0	8 25.6	9 7.1	0 13.2	10 12.0	0 24.9	11 1.6	9 6.0	11 25.1
Mar. 0	9 17.9	9 29.5	0 17.2	10 15.2	0 25.4	11 2.6	9 6.8	11 23.6
Apr. 0	10 11.9	10 23.6	0 23.2	10 19.2	0 26.6	11 3.8	9 7.6	11 22.0
May 0	11 5.2	11 16.7	0 29.9	10 22.1	0 28.2	11 4.8	9 8.4	11 20.4
June 0	11 28.8	0 10.0	1 7.2	10 24.0	1 0.0	11 5.5	9 8.5	11 18.7
July 0	0 21.0	1 1.7	1 14.0	10 24.7	1 1.5	11 5.7	9 8.3	11 17.2
Aug. 0	1 12.8	1 22.8	1 20.2	10 23.9	1 2.6	11 5.5	9 7.5	11 15.5
Sept. 0	2 2.9	2 11.9	1 24.9	10 22.0	1 3.0	11 4.9	9 6.8	11 13.9
Oct. 0	2 20.3	2 27.7	1 27.2	10 19.5	1 2.6	11 4.0	9 6.3	11 12.3
Nov. 0	3 4.5	3 9.2	1 26.5	10 18.1	1 1.6	11 3.3	9 6.2	11 10.7
Dec. 0	3 11.8	3 11.7	1 23.3	10 18.0	1 0.4	11 3.0	9 6.3	11 9.1
2025								
Jan. 0	3 8.2	3 2.6	1 19.3	10 19.1	0 29.4	11 3.1	9 6.8	11 7.4
Feb. 0	2 26.7	2 23.5	1 17.3	10 22.6	0 29.0	11 3.7	9 7.6	11 5.8
Mar. 0	2 23.1	2 25.1	1 18.1	10 25.9	0 29.4	11 4.7	9 8.3	11 4.3
Apr. 0	2 39.4	3 4.8	1 21.8	10 29.9	1 0.5	11 6.0	9 9.2	11 2.6
May 0	3 11.2	3 18.4	1 27.1	11 3.2	1 2.1	11 7.0	9 9.8	11 1.0
June 0	3 26.6	4 7.6	2 3.8	11 5.6	1 3.9	11 7.8	9 10.0	10 29.4
July 0	4 13.3	4 22.1	2 10.5	11 7.0	1 5.5	11 8.0	9 9.8	10 27.8
Aug. 0	5 1.7	5 11.1	2 17.5	11 6.8	1 6.7	11 7.8	9 9.0	10 26.2
Sept. 0	5 21.3	6 1.1	2 23.6	11 5.0	1 7.2	11 7.1	9 8.4	10 24.5
Oct. 0	6 11.1	6 21.4	2 28.3	11 2.8	1 6.9	11 6.3	9 7.9	10 22.9
Nov. 0	7 2.6	7 13.4	3 0.9	11 1.0	1 6.0	11 5.6	9 7.8	10 21.3
Dec. 0	7 24.4	8 5.6	3 0.5	11 0.3	1 4.8	11 5.2	9 7.9	10 19.7
2026								
Jan. 0	8 17.7	8 29.2	2 27.4	11 1.4	1 3.7	11 5.4	9 8.5	10 18.1
Feb. 0	9 11.6	9 23.4	2 23.4	11 4.0	1 3.2	11 6.0	9 9.0	10 16.4
Mar. 0	10 3.6	10 15.5	2 21.2	11 7.4	1 3.5	11 6.9	9 9.7	10 14.9
Apr. 0	10 28.0	11 9.7	2 21.6	11 10.9	1 4.5	11 8.1	9 10.6	10 13.2
May 0	11 21.3	0 2.8	2 24.7	11 14.4	1 6.0	11 9.1	9 11.2	10 11.6
June 0	0 14.8	0 25.8	2 29.8	11 17.6	1 7.8	11 9.9	9 11.3	10 10.0
July 0	1 6.7	1 17.3	3 5.8	11 19.3	1 9.5	11 10.2	9 11.1	10 8.4
Aug. 0	1 28.3	2 8.3	3 12.6	11 19.7	1 10.8	11 10.0	9 10.3	10 6.8
Sept. 0	2 18.7	2 23.1	3 19.4	11 18.5	1 11.4	11 9.4	9 9.7	10 5.1
Oct. 0	3 7.1	3 15.6	3 25.2	11 16.6	1 11.3	11 8.6	9 9.2	10 3.5
Nov. 0	3 24.1	4 1.4	4 0.1	11 14.2	1 10.4	11 7.8	9 9.1	10 1.9
Dec. 0	4 7.6	4 12.5	4 2.5	11 13.0	1 9.2	11 7.4	9 9.2	10 0.3
Dec. 31	4 15.8	4 16.4	4 2.4	11 13.4	1 8.0	11 7.5	9 9.2	0 28.7

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2027							
Jan. 0	Thur.	8 15 4	5 9 57	6 86	22 061	d 18	d 358 0
Feb. 0	Sun.	9 16 33	6 28 25	10 61	23 554	32 8	389 0
Mar. 0	Sun.	10 14 55	7 7 21	11 10	21 9 9	60 8	417 0
Apr. 0	Wed.	11 15 49	8 25 49	14 85	23 492	91 8	448 0
May 0	Fri.	0 15 12	10 1 7	17 51	23 969	6 0	478 0
June 0	Mon.	1 15 7	11 19 35	21 26	25 461	37 0	509 0
July 0	Wed.	2 13 47	0 24 52	23 92	25 938	67 0	539 0
Aug. 0	Sat.	3 13 22	2 13 20	27 67	27 431	98 0	570 0
Sept. 0	Tues.	4 13 9	4 1 43	1 43	28 924	13 1	17 1
Oct. 0	Thur.	5 12 22	5 7 6	4 09	29 401	43 1	47 1
Nov. 0	Sun.	6 13 5	6 25 34	7 84	0 813	74 1	78 1
Dec. 0	Tues.	7 13 17	8 0 51	10 50	1 370	104 1	108 1
2028							
Jan. 0	Fri.	8 14 48	9 19 19	14 25	2 883	19 2	139 1
Feb. 0	Mon.	9 16 23	11 7 47	18 00	4 356	50 2	170 1
Mar. 0	Tues.	10 15 40	11 29 54	19 58	3 817	79 2	199 1
Apr. 0	Fri.	11 16 33	1 18 22	23 33	5 310	110 2	230 1
May 0	Sun.	0 15 56	2 23 39	25 93	5 786	24 3	260 1
June 0	Wed.	1 15 49	4 12 7	29 74	7 279	55 3	291 1
July 0	Fri.	2 14 29	5 17 25	2 41	7 756	85 3	321 1
Aug. 0	Mon.	3 14 1	7 5 52	6 16	9 249	0 4	352 1
Sept. 0	Thur.	4 13 52	8 24 21	9 91	10 742	31 4	383 1
Oct. 0	Sat.	5 13 6	9 29 38	12 57	11 219	61 4	413 1
Nov. 0	Tues.	6 13 50	11 18 6	16 32	12 711	92 4	444 1
Dec. 0	Thur.	7 14 2	0 23 24	18 98	13 188	6 6	474 1
2029							
Jan. 0	Sun.	8 15 34	2 11 52	22 74	14 631	37 6	505 1
Feb. 0	Wed.	9 17 7	4 0 20	26 49	16 174	68 6	536 1
Mar. 0	Wed.	10 15 25	4 9 16	26 97	14 619	96 6	564 1
Apr. 0	Sat.	11 16 18	5 27 44	0 72	16 112	11 7	11 2
May 0	Mon.	0 15 41	7 3 2	3 39	16 588	41 7	41 2
June 0	Thur.	1 15 35	8 21 30	7 14	18 031	72 7	72 2
July 0	Sat.	2 14 15	0 26 47	9 81	18 558	102 7	102 2
Aug. 0	Tues.	3 13 49	11 15 15	13 55	20 051	17 8	133 2
Sept. 0	Fri.	4 13 37	1 3 43	17 30	21 544	48 8	164 2
Oct. 0	Sun.	5 12 51	2 9 1	19 96	22 0 0	78 8	194 2
Nov. 0	Wed.	6 13 34	3 27 29	23 72	23 513	109 8	225 2
Dec. 0	Fri.	7 13 47	5 2 46	26 38	23 990	23 9	255 2
2030							
Jan. 0	Mon.	8 15 14	6 21 14	0 13	25 483	54 9	286 2
Feb. 0	Thur.	9 16 52	8 9 42	3 88	26 976	85 9	317 2
Mar. 0	Thur.	10 15 9	8 18 38	4 37	27 421	113 9	345 2
Apr. 0	Sun.	11 16 3	10 7 6	8 12	26 914	29 1	376 2
May 0	Tues.	0 15 26	11 12 24	10 78	27 390	59 1	406 2
June 0	Fri.	1 15 20	1 0 52	14 53	28 683	90 1	437 2
July 0	Sun.	2 14 0	2 6 9	17 19	29 360	4 2	467 2
Aug. 0	Wed.	3 13 35	3 24 37	20 94	0 853	35 2	498 2
Sept. 0	Sat.	4 13 22	5 13 5	24 69	2 346	66 2	529 2
Oct. 0	Mon.	5 12 36	6 18 23	27 36	2 822	96 2	559 2
Nov. 0	Thur.	6 13 19	8 6 51	1 11	4 315	11 3	6 3
Dec. 0	Sat.	7 13 31	9 12 8	3 77	4 792	41 3	36 3
Dec. 31	Tues.	8 15 2	11 0 36	7 52	6 285	72 3	67 3

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2027</b>								
Jan. 0	4 15 <sup>8</sup>	4 16 <sup>4</sup>	4 2 <sup>4</sup>	11 13 <sup>4</sup>	1 8 <sup>0</sup>	11 7 <sup>5</sup>	9 10 <sup>1</sup>	9 28 <sup>7</sup>
Feb. 0	4 13 <sup>8</sup>	4 8 <sup>6</sup>	3 29 <sup>3</sup>	11 15 <sup>5</sup>	1 7 <sup>4</sup>	11 8 <sup>1</sup>	9 10 <sup>5</sup>	9 27 <sup>0</sup>
Mar. 0	4 3 <sup>6</sup>	3 28 <sup>9</sup>	3 25 <sup>6</sup>	11 18 <sup>5</sup>	1 7 <sup>6</sup>	11 9 <sup>0</sup>	9 11 <sup>4</sup>	9 25 <sup>5</sup>
Apr. 0	3 27 <sup>0</sup>	3 28 <sup>0</sup>	3 23 <sup>1</sup>	11 22 <sup>2</sup>	1 8 <sup>6</sup>	11 10 <sup>2</sup>	9 12 <sup>1</sup>	9 23 <sup>9</sup>
May 0	4 1 <sup>3</sup>	4 6 <sup>2</sup>	3 23 <sup>3</sup>	11 25 <sup>9</sup>	1 10 <sup>0</sup>	11 11 <sup>3</sup>	9 12 <sup>6</sup>	9 22 <sup>3</sup>
June 0	4 12 <sup>8</sup>	4 19 <sup>8</sup>	3 26 <sup>1</sup>	11 29 <sup>3</sup>	1 11 <sup>8</sup>	11 12 <sup>1</sup>	9 12 <sup>6</sup>	9 20 <sup>7</sup>
July 0	4 27 <sup>6</sup>	5 5 <sup>9</sup>	4 0 <sup>8</sup>	0 1 <sup>7</sup>	1 13 <sup>5</sup>	11 12 <sup>3</sup>	9 12 <sup>0</sup>	9 19 <sup>1</sup>
Aug. 0	5 15 <sup>2</sup>	5 24 <sup>4</sup>	4 6 <sup>8</sup>	0 2 <sup>8</sup>	1 14 <sup>9</sup>	11 12 <sup>2</sup>	9 11 <sup>3</sup>	9 17 <sup>4</sup>
Sept. 0	6 4 <sup>6</sup>	6 14 <sup>5</sup>	4 13 <sup>5</sup>	0 2 <sup>3</sup>	1 15 <sup>6</sup>	11 11 <sup>5</sup>	9 10 <sup>7</sup>	9 15 <sup>8</sup>
Oct. 0	6 24 <sup>7</sup>	7 5 <sup>1</sup>	4 19 <sup>9</sup>	0 0 <sup>5</sup>	1 15 <sup>6</sup>	11 10 <sup>7</sup>	9 10 <sup>3</sup>	9 14 <sup>2</sup>
Nov. 0	7 16 <sup>6</sup>	7 27 <sup>7</sup>	4 25 <sup>9</sup>	11 27 <sup>9</sup>	1 14 <sup>8</sup>	11 10 <sup>0</sup>	9 10 <sup>3</sup>	9 12 <sup>6</sup>
Dec. 0	8 8 <sup>9</sup>	8 20 <sup>4</sup>	5 0 <sup>5</sup>	11 26 <sup>4</sup>	1 13 <sup>6</sup>	11 9 <sup>5</sup>	9 10 <sup>6</sup>	9 11 <sup>0</sup>
<b>2028</b>								
Jan. 0	9 2 <sup>8</sup>	9 14 <sup>6</sup>	5 3 <sup>0</sup>	11 26 <sup>1</sup>	1 12 <sup>4</sup>	11 9 <sup>6</sup>	9 11 <sup>1</sup>	9 9 <sup>3</sup>
Feb. 0	9 27 <sup>2</sup>	10 9 <sup>1</sup>	5 2 <sup>8</sup>	11 27 <sup>5</sup>	1 11 <sup>7</sup>	11 10 <sup>3</sup>	9 12 <sup>1</sup>	9 7 <sup>7</sup>
Mar. 0	10 20 <sup>1</sup>	11 1 <sup>9</sup>	5 0 <sup>0</sup>	0 0 <sup>0</sup>	1 11 <sup>8</sup>	11 11 <sup>1</sup>	9 13 <sup>0</sup>	9 6 <sup>2</sup>
Apr. 0	11 14 <sup>4</sup>	11 25 <sup>9</sup>	4 26 <sup>1</sup>	0 3 <sup>7</sup>	1 12 <sup>6</sup>	11 12 <sup>3</sup>	9 13 <sup>7</sup>	9 4 <sup>6</sup>
May 0	0 7 <sup>3</sup>	0 18 <sup>5</sup>	4 23 <sup>6</sup>	0 7 <sup>6</sup>	1 14 <sup>1</sup>	11 13 <sup>3</sup>	9 14 <sup>2</sup>	9 3 <sup>0</sup>
June 0	1 0 <sup>2</sup>	1 11 <sup>0</sup>	4 23 <sup>7</sup>	0 11 <sup>0</sup>	1 15 <sup>8</sup>	11 14 <sup>3</sup>	9 14 <sup>2</sup>	9 1 <sup>3</sup>
July 0	1 21 <sup>5</sup>	2 1 <sup>9</sup>	4 26 <sup>4</sup>	0 14 <sup>0</sup>	1 17 <sup>5</sup>	11 14 <sup>6</sup>	9 13 <sup>0</sup>	8 29 <sup>7</sup>
Aug. 0	2 12 <sup>7</sup>	2 22 <sup>7</sup>	5 1 <sup>2</sup>	0 15 <sup>8</sup>	1 19 <sup>0</sup>	11 14 <sup>4</sup>	9 12 <sup>9</sup>	8 28 <sup>1</sup>
Sept. 0	3 3 <sup>0</sup>	3 12 <sup>5</sup>	5 7 <sup>2</sup>	0 16 <sup>1</sup>	1 19 <sup>8</sup>	11 13 <sup>8</sup>	9 12 <sup>3</sup>	8 26 <sup>5</sup>
Oct. 0	3 21 <sup>7</sup>	4 0 <sup>7</sup>	5 13 <sup>6</sup>	0 14 <sup>8</sup>	1 19 <sup>9</sup>	11 13 <sup>1</sup>	9 11 <sup>9</sup>	8 24 <sup>9</sup>
Nov. 0	4 10 <sup>0</sup>	4 18 <sup>2</sup>	5 20 <sup>2</sup>	0 12 <sup>1</sup>	1 19 <sup>2</sup>	11 12 <sup>2</sup>	9 11 <sup>9</sup>	8 23 <sup>2</sup>
Dec. 0	4 26 <sup>0</sup>	5 3 <sup>2</sup>	5 25 <sup>3</sup>	0 10 <sup>3</sup>	1 18 <sup>0</sup>	11 11 <sup>8</sup>	9 12 <sup>2</sup>	8 21 <sup>6</sup>
<b>2029</b>								
Jan. 0	5 9 <sup>9</sup>	5 15 <sup>0</sup>	6 0 <sup>4</sup>	0 9 <sup>3</sup>	1 16 <sup>8</sup>	11 11 <sup>8</sup>	9 13 <sup>0</sup>	8 20 <sup>0</sup>
Feb. 0	5 18 <sup>7</sup>	5 19 <sup>9</sup>	6 3 <sup>0</sup>	0 10 <sup>0</sup>	1 16 <sup>0</sup>	11 12 <sup>3</sup>	9 13 <sup>7</sup>	8 18 <sup>2</sup>
Mar. 0	5 18 <sup>7</sup>	5 14 <sup>7</sup>	6 2 <sup>7</sup>	0 12 <sup>0</sup>	1 16 <sup>0</sup>	11 13 <sup>3</sup>	9 14 <sup>6</sup>	8 16 <sup>8</sup>
Apr. 0	5 8 <sup>6</sup>	5 3 <sup>6</sup>	5 29 <sup>9</sup>	0 15 <sup>5</sup>	1 16 <sup>7</sup>	11 14 <sup>5</sup>	9 15 <sup>3</sup>	8 15 <sup>2</sup>
May 0	5 1 <sup>1</sup>	5 1 <sup>4</sup>	5 26 <sup>1</sup>	0 19 <sup>2</sup>	1 18 <sup>1</sup>	11 15 <sup>6</sup>	9 15 <sup>8</sup>	8 13 <sup>6</sup>
June 0	5 4 <sup>4</sup>	5 9 <sup>3</sup>	5 23 <sup>6</sup>	0 23 <sup>0</sup>	1 19 <sup>8</sup>	11 16 <sup>6</sup>	9 15 <sup>8</sup>	8 11 <sup>9</sup>
July 0	5 15 <sup>5</sup>	5 22 <sup>7</sup>	5 23 <sup>5</sup>	0 26 <sup>4</sup>	1 21 <sup>6</sup>	11 16 <sup>5</sup>	9 15 <sup>2</sup>	8 10 <sup>3</sup>
Aug. 0	6 1 <sup>4</sup>	6 10 <sup>2</sup>	5 26 <sup>4</sup>	0 28 <sup>8</sup>	1 23 <sup>1</sup>	11 16 <sup>4</sup>	9 14 <sup>5</sup>	8 8 <sup>7</sup>
Sept. 0	6 20 <sup>2</sup>	7 0 <sup>1</sup>	6 1 <sup>1</sup>	0 29 <sup>8</sup>	1 24 <sup>0</sup>	11 16 <sup>3</sup>	9 13 <sup>9</sup>	8 7 <sup>1</sup>
Oct. 0	7 10 <sup>4</sup>	7 21 <sup>0</sup>	6 6 <sup>9</sup>	0 29 <sup>2</sup>	1 24 <sup>2</sup>	11 15 <sup>5</sup>	9 13 <sup>5</sup>	8 5 <sup>5</sup>
Nov. 0	8 2 <sup>7</sup>	8 13 <sup>9</sup>	6 13 <sup>6</sup>	0 27 <sup>2</sup>	1 23 <sup>6</sup>	11 14 <sup>7</sup>	9 13 <sup>5</sup>	8 3 <sup>8</sup>
Dec. 0	8 25 <sup>4</sup>	9 7 <sup>0</sup>	6 20 <sup>1</sup>	0 24 <sup>8</sup>	1 22 <sup>5</sup>	11 14 <sup>1</sup>	9 13 <sup>8</sup>	8 2 <sup>2</sup>
<b>2030</b>								
Jan. 0	9 19 <sup>5</sup>	10 1 <sup>3</sup>	6 26 <sup>1</sup>	0 23 <sup>1</sup>	1 21 <sup>2</sup>	11 14 <sup>1</sup>	9 14 <sup>5</sup>	8 0 <sup>6</sup>
Feb. 0	10 13 <sup>9</sup>	10 25 <sup>7</sup>	7 0 <sup>7</sup>	0 23 <sup>1</sup>	1 20 <sup>4</sup>	11 14 <sup>6</sup>	9 15 <sup>2</sup>	7 28 <sup>9</sup>
Mar. 0	11 5 <sup>8</sup>	11 17 <sup>4</sup>	7 3 <sup>0</sup>	0 24 <sup>4</sup>	1 20 <sup>2</sup>	11 15 <sup>4</sup>	9 16 <sup>1</sup>	7 27 <sup>5</sup>
Apr. 0	11 29 <sup>5</sup>	0 10 <sup>8</sup>	7 2 <sup>9</sup>	0 27 <sup>7</sup>	1 20 <sup>9</sup>	11 16 <sup>6</sup>	9 16 <sup>3</sup>	7 25 <sup>8</sup>
May 0	0 21 <sup>8</sup>	1 2 <sup>7</sup>	7 0 <sup>1</sup>	1 1 <sup>0</sup>	1 22 <sup>2</sup>	11 17 <sup>7</sup>	9 17 <sup>3</sup>	7 24 <sup>2</sup>
June 0	1 14 <sup>0</sup>	1 24 <sup>5</sup>	6 26 <sup>3</sup>	1 5 <sup>0</sup>	1 23 <sup>9</sup>	11 18 <sup>7</sup>	9 17 <sup>3</sup>	7 22 <sup>6</sup>
July 0	2 4 <sup>8</sup>	2 14 <sup>9</sup>	6 23 <sup>9</sup>	1 9 <sup>1</sup>	1 25 <sup>6</sup>	11 19 <sup>0</sup>	9 16 <sup>7</sup>	7 21 <sup>0</sup>
Aug. 0	2 25 <sup>5</sup>	3 5 <sup>3</sup>	6 23 <sup>8</sup>	1 11 <sup>6</sup>	1 27 <sup>2</sup>	11 19 <sup>0</sup>	9 16 <sup>0</sup>	7 19 <sup>4</sup>
Sept. 0	3 15 <sup>6</sup>	3 25 <sup>1</sup>	6 26 <sup>5</sup>	1 13 <sup>4</sup>	1 28 <sup>3</sup>	11 18 <sup>5</sup>	9 15 <sup>4</sup>	7 17 <sup>7</sup>
Oct. 0	4 4 <sup>5</sup>	4 13 <sup>7</sup>	7 1 <sup>2</sup>	1 13 <sup>5</sup>	1 28 <sup>6</sup>	11 17 <sup>6</sup>	9 15 <sup>0</sup>	7 16 <sup>1</sup>
Nov. 0	4 23 <sup>4</sup>	5 2 <sup>3</sup>	7 7 <sup>4</sup>	1 12 <sup>1</sup>	1 28 <sup>1</sup>	11 16 <sup>8</sup>	9 15 <sup>0</sup>	7 14 <sup>5</sup>
Dec. 0	5 11 <sup>0</sup>	5 19 <sup>4</sup>	7 14 <sup>0</sup>	1 9 <sup>7</sup>	1 27 <sup>0</sup>	11 16 <sup>3</sup>	9 15 <sup>3</sup>	7 12 <sup>9</sup>
Dec. 31	5 27 <sup>9</sup>	6 5 <sup>5</sup>	7 20 <sup>9</sup>	1 7 <sup>6</sup>	1 25 <sup>7</sup>	11 16 <sup>2</sup>	9 16 <sup>3</sup>	7 11 <sup>2</sup>

## 2031-2034: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2031							
Jan. 0	Tues.	8 15 2	11 0 36	7:52	6:285	d 72:3	d 67:3
Feb. 0	Fri.	9 16 36	0 19 4	11:27	7:778	103:3	98:3
Mar. 0	Fri.	10 14 54	0 28 1	11:76	6:223	15:4	126:3
Apr. 0	Mon.	11 15 47	2 16 29	15:51	7:715	46:4	157:3
May 0	Wed.	0 15 11	3 21 46	18:17	8:192	76:4	187:3
June 0	Sat.	1 15 5	5 10 14	21:92	9:685	107:4	218:3
July 0	Mon.	2 13 45	6 15 32	24:59	10:162	21:5	248:3
Aug. 0	Thur.	3 13 20	8 4 0	28:34	11:655	52:5	279:3
Sept. 0	Sun.	4 13 7	9 22 28	2:09	13:148	83:5	310:3
Oct. 0	Tues.	5 12 21	10 27 45	4:75	13:624	113:5	340:3
Nov. 0	Fri.	6 13 4	0 16 13	8:50	15:117	28:7	371:3
Dec. 0	Sun.	7 13 16	1 21 31	11:16	15:594	58:7	401:3
2032							
Jan. 0	Wed.	8 14 47	3 9 59	14:92	17:087	89:7	432:3
Feb. 0	Sat.	9 16 21	4 28 27	18:67	18:580	4:8	463:3
Mar. 0	Sun.	10 15 39	5 20 33	20:24	18:041	33:8	492:3
Apr. 0	Wed.	11 16 31	7 9 2	23:99	19:533	64:8	522:3
May 0	Fri.	0 15 54	8 14 19	26:65	20:010	94:8	553:3
June 0	Mon.	1 15 48	10 2 47	0:41	21:503	9:9	0:4
July 0	Wed.	2 11 28	11 8 4	3:07	21:980	39:9	30:4
Aug. 0	Sat.	3 14 3	0 26 32	6:82	23:473	70:9	61:4
Sept. 0	Tues.	4 13 50	2 15 0	10:57	24:965	111:9	92:4
Oct. 0	Thur.	5 13 5	3 20 18	13:23	25:442	16:0	122:4
Nov. 0	Sun.	6 13 48	5 8 46	16:98	26:935	47:0	153:4
Dec. 0	Tues.	7 14 1	6 14 3	19:05	27:412	77:0	183:4
2033							
Jan. 0	Fri.	8 15 32	8 2 31	23:40	28:905	108:0	214:4
Feb. 0	Mon.	9 17 6	9 20 59	27:15	0:397	23:2	245:4
Mar. 0	Mon.	10 15 23	9 29 56	27:63	28:843	51:2	273:4
Apr. 0	Thur.	11 16 16	11 18 24	1:39	0:335	82:2	304:4
May 0	Sat.	0 15 39	0 23 41	4:05	0:812	112:2	334:4
June 0	Tues.	1 15 33	2 12 9	7:80	2:303	27:3	365:4
July 0	Thur.	2 14 13	3 17 27	10:46	2:782	57:3	395:4
Aug. 0	Sun.	3 13 48	5 5 55	14:21	4:275	88:3	426:4
Sept. 0	Wed.	4 13 36	6 24 23	17:06	5:767	3:4	457:4
Oct. 0	Fri.	5 12 50	7 29 40	20:63	6:444	33:4	487:4
Nov. 0	Mon.	6 13 33	9 18 8	24:38	7:737	64:4	518:4
Dec. 0	Wed.	7 13 45	10 23 26	27:04	8:214	94:4	548:4
2034							
Jan. 0	Sat.	8 15 17	0 11 54	0:79	9:707	9:5	579:4
Feb. 0	Tues.	9 16 50	2 0 22	4:54	11:199	40:5	26:4
Mar. 0	Tues.	10 15 8	2 9 18	5:03	9:644	68:5	54:4
Apr. 0	Fri.	11 16 1	3 27 46	8:78	11:137	99:5	85:4
May 0	Sun.	0 15 24	5 3 3	11:44	11:614	13:6	115:4
June 0	Wed.	1 15 19	6 21 32	15:19	13:107	44:6	146:4
July 0	Fri.	2 13 59	7 26 49	17:85	13:584	74:6	176:4
Aug. 0	Mon.	3 13 33	9 15 17	21:61	15:077	105:6	207:4
Sept. 0	Thur.	4 13 21	11 3 45	25:36	16:569	20:8	238:4
Oct. 0	Sat.	5 12 34	0 9 2	28:02	17:046	50:8	268:4
Nov. 0	Tues.	6 13 17	1 27 30	1:77	18:539	81:8	299:4
Dec. 0	Thur.	7 13 30	3 2 48	4:43	19:016	111:8	329:4
Dec. 31	Sun.	8 15 1	4 21 16	8:19	20:509	26:9	360:4

# EPHEMERIS

Planets: 2031-2034

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2031</b>								
Jan. 0	5 27.9	6 5.5	7 20.9	1 7.6	1 25.7	11 16.2	9 16.3	7 11.2
Feb. 0	6 12.8	6 18.8	7 27.1	1 6.7	1 24.8	11 16.7	9 17.4	7 9.6
Mar. 0	6 23.0	6 26.2	8 1.5	1 7.5	1 24.5	11 17.5	9 18.3	7 8.1
Apr. 0	6 27.3	6 23.4	8 4.4	1 9.9	1 25.1	11 18.7	9 19.0	7 6.5
May 0	6 20.9	6 15.5	8 4.4	1 13.3	1 26.3	11 19.8	9 19.5	7 4.9
June 0	6 11.1	6 10.0	8 1.4	1 17.2	1 28.0	11 20.8	9 19.5	7 3.2
July 0	6 11.8	6 15.9	7 28.0	1 21.0	1 29.7	11 21.2	9 18.9	7 1.7
Aug. 0	6 22.4	6 23.9	7 25.3	1 24.5	2 1.4	11 21.1	9 18.2	7 0.0
Sept. 0	7 8.9	7 18.3	7 25.2	1 26.8	2 2.4	11 20.7	9 17.6	6 28.4
Oct. 0	7 28.2	8 8.7	7 27.8	1 27.7	2 3.0	11 19.9	9 17.2	6 26.8
Nov. 0	8 20.2	9 1.4	8 2.7	1 26.9	2 2.6	11 19.1	9 17.2	6 25.1
Dec. 0	9 12.8	9 24.2	8 8.8	1 24.8	2 1.6	11 18.5	9 17.5	6 23.6
<b>2032</b>								
Jan. 0	10 6.6	10 18.1	8 15.9	1 22.4	2 0.3	11 18.5	9 18.2	6 21.9
Feb. 0	11 0.4	11 11.8	8 23.0	1 20.9	1 23.2	11 18.9	9 18.9	6 20.3
Mar. 0	11 22.3	0 3.5	8 29.1	1 21.0	1 28.9	11 19.7	9 19.8	6 18.8
Apr. 0	0 15.2	0 25.9	9 4.0	1 22.6	1 29.3	11 20.8	9 20.5	6 17.1
May 0	1 6.5	1 17.0	9 7.3	1 25.6	2 0.5	11 21.9	9 21.0	6 15.5
June 0	1 27.9	2 3.0	9 7.7	1 29.5	2 2.1	11 22.9	9 21.0	6 13.9
July 0	2 18.0	2 27.9	9 5.5	2 3.2	2 3.9	11 23.3	9 20.4	6 12.3
Aug. 0	3 8.3	3 17.9	9 1.5	2 7.0	2 5.6	11 23.4	9 19.7	6 10.7
Sept. 0	3 28.2	4 7.7	8 28.7	2 10.0	2 6.8	11 22.9	9 19.1	6 9.0
Oct. 0	4 17.2	4 26.6	8 28.3	2 11.6	2 7.3	11 23.1	9 18.7	6 7.4
Nov. 0	5 6.6	5 15.9	9 1.0	2 11.6	2 7.1	11 21.2	9 18.7	6 5.8
Dec. 0	5 25.1	6 4.3	9 5.7	2 10.1	2 6.1	11 20.7	9 19.0	6 4.2
<b>2033</b>								
Jan. 0	6 13.9	6 22.8	9 12.2	2 7.7	2 4.8	11 20.6	9 19.7	6 2.6
Feb. 0	7 2.1	7 10.6	9 19.5	2 5.5	2 3.7	11 21.0	9 20.4	6 0.9
Mar. 0	7 17.6	7 25.3	9 26.2	2 4.9	2 3.3	11 21.8	9 21.3	5 29.4
Apr. 0	8 3.8	8 8.9	10 2.9	2 5.8	2 3.6	11 23.0	9 22.0	5 27.7
May 0	8 13.7	8 16.7	10 8.4	2 8.2	2 4.6	11 24.1	9 22.5	5 26.1
June 0	8 17.1	8 14.7	10 12.1	2 11.7	2 6.2	11 25.1	9 22.5	5 24.5
July 0	8 10.4	8 6.2	10 13.2	2 15.5	2 8.0	11 25.6	9 21.9	5 22.9
Aug. 0	8 4.4	8 5.8	10 11.3	2 19.5	2 9.7	11 25.6	9 21.2	5 21.3
Sept. 0	8 10.3	8 16.7	10 7.1	2 22.9	2 11.1	11 25.2	9 20.6	5 19.6
Oct. 0	8 24.5	9 3.4	10 4.3	2 25.2	2 11.7	11 24.4	9 20.2	5 18.0
Nov. 0	9 13.7	9 23.8	10 3.4	2 26.0	2 11.6	11 23.6	9 20.2	5 16.4
Dec. 0	10 4.3	10 15.0	10 5.1	2 25.2	2 10.7	11 23.0	9 20.5	5 14.8
<b>2034</b>								
Jan. 0	10 26.4	11 7.2	10 10.1	2 23.0	2 9.4	11 22.9	9 21.2	5 13.2
Feb. 0	11 18.7	11 29.3	10 16.0	2 20.6	2 8.3	11 23.3	9 21.9	5 11.5
Mar. 0	0 8.5	0 18.9	10 23.5	2 19.2	2 7.7	11 24.0	9 22.8	5 10.0
Apr. 0	0 29.9	1 10.1	11 0.9	2 19.3	2 7.9	11 25.1	9 23.5	5 8.4
May 0	1 20.2	2 0.2	11 7.8	2 21.1	2 8.8	11 26.2	9 24.0	5 6.8
June 0	2 10.7	2 20.5	11 13.8	2 24.1	2 10.4	11 27.2	9 23.9	5 5.2
July 0	3 0.2	3 9.8	11 18.0	2 27.8	2 12.2	11 27.7	9 23.4	5 3.6
Aug. 0	3 20.0	3 29.6	11 19.9	3 1.8	2 13.9	11 27.8	9 22.7	5 1.9
Sept. 0	4 9.8	4 19.3	11 18.7	3 5.5	2 15.4	11 27.4	9 22.1	5 0.3
Oct. 0	4 28.9	5 8.5	11 15.2	3 8.3	2 16.1	11 26.6	9 21.7	4 28.7
Nov. 0	5 19.7	5 28.4	11 11.4	3 9.9	2 16.1	11 25.8	9 21.7	4 27.1
Dec. 0	6 8.1	6 17.8	11 10.0	3 9.9	2 15.4	11 25.2	9 22.0	4 25.5
Dec. 31	6 28.2	7 8.0	11 11.6	3 8.2	2 14.1	11 25.0	9 22.7	4 23.9

2035-2038: Sun, Moon

ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2035							
Jan. 0	Sun.	8 15 1	4 21 16	8-19	20-509	d	d
Feb. 0	Wed.	9 16 35	6 9 44	11-94	22-001	26-9	360-4
Mar. 0	Wed.	10 14 52	6 18 40	12-42	20-446	57-9	391-4
Apr. 0	Sat.	11 15 46	8 7 8	16-17	21-939	85-9	419-4
May 0	Mon.	0 15 9	9 12 26	18-84	22-416	1-0	450-4
June 0	Thur.	1 15 4	11 0 54	22-59	23-909	31-0	480-4
July 0	Sat.	2 13 44	0 6 11	25-25	24-385	62-0	511-4
Aug. 0	Tues.	3 13 19	1 24 39	29-00	25-878	92-0	541-4
Sept. 0	Fri.	4 13 6	3 13 7	2-75	27-371	7-1	572-4
Oct. 0	Sun.	5 12 19	4 18 25	5-41	27-848	38-1	19-5
Nov. 0	Wed.	6 13 2	6 6 53	9-16	29-341	68-1	49-5
Dec. 0	Fri.	7 13 14	7 12 10	11-83	29-818	99-1	80-5
						13-3	110-5
2036							
Jan. 0	Mon.	8 14 45	9 0 38	15-58	1-311	44-3	141-5
Feb. 0	Thur.	9 16 19	10 19 6	19-33	2-803	75-3	172-5
Mar. 0	Fri.	10 15 37	11 11 13	20-90	2-264	104-3	201-5
Apr. 0	Mon.	11 16 30	0 29 41	24-65	3-757	19-4	232-5
May 0	Wed.	0 15 53	2 4 59	27-32	4-234	49-4	262-5
June 0	Sat.	1 15 47	3 23 27	1-07	5-727	80-4	293-5
July 0	Mon.	2 14 26	4 28 44	3-73	6-204	110-4	323-5
Aug. 0	Thur.	3 14 1	6 17 12	7-48	7-696	25-5	354-5
Sept. 0	Sun.	4 13 49	8 5 40	11-23	9-189	56-5	385-5
Oct. 0	Tues.	5 13 3	9 10 57	13-90	9-666	86-5	415-5
Nov. 0	Fri.	6 13 47	10 29 26	17-65	11-159	1-6	446-5
Dec. 0	Sun.	7 13 59	0 4 43	20-31	11-636	31-6	476-5
2037							
Jan. 0	Wed.	8 15 31	1 23 11	24-06	13-128	62-6	507-5
Feb. 0	Sat.	9 17 5	3 11 39	27-81	14-621	93-6	538-5
Mar. 0	Sat.	10 15 22	3 20 35	28-30	13-066	5-7	566-5
Apr. 0	Tues.	11 16 15	5 9 3	2-05	14-559	36-7	13-6
May 0	Thur.	0 15 38	6 14 21	4-71	15-036	66-7	43-6
June 0	Sun.	1 15 32	8 2 49	8-46	16-529	97-7	74-6
July 0	Tues.	2 14 12	9 8 6	11-12	17-006	11-9	104-6
Aug. 0	Fri.	3 13 47	10 26 34	14-88	18-498	42-9	135-6
Sept. 0	Mon.	4 13 34	0 15 2	18-63	19-991	73-9	166-6
Oct. 0	Wed.	5 12 48	1 20 20	21-29	20-468	103-9	196-6
Nov. 0	Sat.	6 13 31	3 8 48	25-04	21-961	19-0	227-6
Dec. 0	Mon.	7 13 44	4 14 5	27-70	22-438	49-0	257-6
2038							
Jan. 0	Thur.	8 15 15	6 2 33	1-45	23-930	80-0	288-6
Feb. 0	Sun.	9 16 49	7 21 1	5-21	25-423	111-0	319-6
Mar. 0	Sun.	10 15 6	7 29 58	5-69	23-868	23-1	347-6
Apr. 0	Wed.	11 16 0	9 18 26	9-44	25-361	54-1	378-6
May 0	Fri.	0 15 23	10 23 43	12-00	25-838	84-1	408-6
June 0	Mon.	1 15 17	0 12 11	15-86	27-331	115-1	439-6
July 0	Wed.	2 13 57	1 17 28	18-52	27-807	29-2	469-6
Aug. 0	Sat.	3 13 32	3 5 57	22-27	29-300	60-2	500-6
Sept. 0	Tues.	4 13 19	4 24 25	26-02	0-793	91-2	531-6
Oct. 0	Thur.	5 12 33	5 29 42	28-68	1-270	5-4	561-6
Nov. 0	Sun.	6 13 16	7 18 10	2-43	2-763	36-4	8-7
Dec. 0	Tues.	7 13 28	8 23 27	5-10	3-240	66-4	38-7
Dec. 31	Fri.	8 14 59	10 11 55	8-85	4-732	97-4	69-7



# EPHEMERIS

Planets : 2035-2038

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2035</b>								
Jan. 0	6 28.2	7 8.0	11 11.6	3 8.2	2 14.1	11 25.0	9 22.7	4 23.9
Feb. 0	7 18.5	7 28.4	11 16.1	3 5.7	2 12.9	11 25.4	9 23.3	4 22.2
Mar. 0	8 6.9	8 16.7	11 21.7	3 3.8	2 12.2	11 26.1	9 24.2	4 20.7
Apr. 0	8 27.2	9 6.8	11 28.8	3 3.2	2 12.3	11 27.2	9 24.9	4 19.1
May 0	9 16.4	9 25.7	0 6.0	3 4.2	2 13.1	11 28.5	9 25.4	4 17.5
June 0	10 5.2	10 13.5	0 13.2	3 6.5	2 14.6	11 29.5	9 25.3	4 15.9
July 0	10 20.8	10 26.9	0 19.3	3 10.1	2 16.3	0 0.1	9 24.8	4 14.3
Aug. 0	11 1.2	11 2.4	0 24.1	3 14.0	2 18.2	0 0.2	9 24.1	4 12.6
Sept. 0	11 0.5	10 26.6	0 26.6	3 17.9	2 19.7	11 29.9	9 23.5	4 11.0
Oct. 0	10 23.1	10 21.9	0 26.1	3 21.2	2 20.5	11 29.2	9 23.1	4 9.4
Nov. 0	10 23.9	10 23.2	0 22.7	3 23.3	2 20.7	11 28.4	9 23.1	4 7.7
Dec. 0	11 4.3	11 11.5	0 18.8	3 24.0	2 20.0	11 27.7	9 23.4	4 6.2
<b>2036</b>								
Jan. 0	11 20.2	11 28.8	0 16.7	3 23.0	2 18.8	11 27.5	9 24.0	4 4.5
Feb. 0	0 8.4	0 17.6	0 17.6	3 21.2	2 17.5	11 27.7	9 24.7	4 2.9
Mar. 0	0 26.3	1 5.7	0 21.3	3 18.6	2 16.7	11 28.4	9 25.5	4 1.4
Apr. 0	1 15.7	1 25.2	0 27.1	3 17.2	2 16.7	11 29.4	9 26.3	3 29.7
May 0	2 4.6	2 14.0	1 3.7	3 17.5	2 17.5	0 0.6	9 26.8	3 28.2
June 0	2 24.0	3 3.4	1 11.0	3 19.3	2 18.9	0 1.6	9 27.0	3 26.5
July 0	3 12.8	3 22.2	1 17.8	3 22.3	2 20.6	0 2.2	9 26.7	3 24.9
Aug. 0	4 2.3	4 11.8	1 24.2	3 26.0	2 22.4	0 2.4	9 26.1	3 23.3
Sept. 0	4 21.9	5 1.5	1 29.1	4 0.0	2 24.0	0 2.1	9 25.5	3 21.7
Oct. 0	5 11.2	5 21.0	2 1.7	4 3.5	2 25.0	0 1.4	9 25.0	3 20.1
Nov. 0	6 1.5	6 11.5	2 1.7	4 6.3	2 25.2	0 0.6	9 24.9	3 18.4
Dec. 0	6 21.6	7 1.8	1 29.2	4 7.6	2 24.6	11 29.9	9 25.0	3 16.8
<b>2037</b>								
Jan. 0	7 12.8	7 23.3	1 24.7	4 7.3	2 23.5	11 29.6	9 25.5	3 15.2
Feb. 0	8 4.6	8 15.3	1 22.2	4 5.7	2 22.2	11 29.8	9 26.1	3 13.5
Mar. 0	8 24.7	9 5.6	1 22.6	4 3.3	2 21.3	0 0.5	9 26.9	3 12.0
Apr. 0	9 17.3	9 28.3	1 25.8	4 1.3	2 21.2	0 1.5	9 27.7	3 10.3
May 0	10 9.4	10 20.4	2 1.0	4 0.8	2 21.8	0 2.8	9 28.5	3 8.8
June 0	11 2.1	11 12.8	2 7.4	4 2.0	2 23.1	0 3.8	9 29.0	3 7.1
July 0	11 23.3	0 3.4	2 14.1	4 4.4	2 24.8	0 4.5	9 29.2	3 5.5
Aug. 0	0 13.5	0 22.2	2 21.1	4 7.9	2 26.7	0 4.7	9 28.9	3 3.0
Sept. 0	1 0.3	1 6.3	2 27.4	4 11.8	2 28.4	0 4.4	9 28.3	3 2.2
Oct. 0	1 10.2	1 11.2	3 2.2	4 15.4	2 29.4	0 3.7	9 27.7	3 0.7
Nov. 0	1 8.7	1 3.8	3 5.2	4 18.6	2 29.8	0 2.9	9 27.2	2 29.0
Dec. 0	0 28.6	0 25.7	3 5.3	4 20.6	2 29.3	0 2.2	9 27.1	2 27.6
<b>2038</b>								
Jan. 0	0 25.8	0 28.6	3 2.5	4 21.1	2 28.2	0 1.9	9 27.2	2 25.8
Feb. 0	1 3.7	1 9.8	2 28.5	4 19.8	2 26.9	0 2.1	9 27.6	2 24.1
Mar. 0	1 15.8	1 23.3	2 26.0	4 17.7	2 26.0	0 2.8	9 28.3	2 22.7
Apr. 0	2 1.9	2 10.2	2 25.8	4 15.5	2 25.7	0 3.7	9 29.1	2 21.0
May 0	2 18.7	2 27.4	2 28.6	4 14.3	2 26.2	0 4.9	9 29.9	2 19.4
June 0	3 6.9	3 15.8	3 3.4	4 14.7	2 27.4	0 5.9	10 0.4	2 17.8
July 0	3 25.9	4 4.1	3 9.3	4 16.5	2 29.1	0 6.6	10 0.6	2 16.2
Aug. 0	4 14.0	4 23.4	3 16.0	4 19.6	3 1.0	0 6.8	10 0.3	2 14.5
Sept. 0	5 3.6	5 13.3	3 22.8	4 23.3	3 2.7	0 6.6	9 29.7	2 12.9
Oct. 0	5 23.1	6 3.1	3 28.7	4 27.0	3 3.9	0 6.0	9 29.1	2 11.3
Nov. 0	6 13.9	6 24.2	4 3.8	5 0.5	3 4.4	0 5.2	9 28.6	2 9.7
Dec. 0	7 4.6	7 15.3	4 6.7	5 3.0	3 4.1	0 4.4	9 28.5	2 8.1
Dec. 31	7 26.8	8 7.8	4 6.9	5 4.2	3 3.0	0 4.1	9 28.6	2 6.4

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Titan	Days from Conjunction	
						Mercury	Venus
2039							
Jan. 0	Fri.	8 14 59	10 11 55	8°5	4-732	97.4	69.7
Feb. 0	Mon.	9 16 33	0 0 24	12-60	6-225	12.5	100.7
Mar. 0	Mon.	10 14 51	0 9 20	13-08	4-670	40.5	128.7
Apr. 0	Thur.	11 15 44	1 27 48	16-81	6-163	71.5	159.7
May 0	Sat.	0 15 8	3 3 5	19-50	6-610	101.5	189.7
June 0	Tues.	1 15 2	4 21 33	23-25	8-133	16.6	220.7
July 0	Thur.	2 13 42	5 26 51	25-91	8-609	46.6	250.7
Aug. 0	Sun.	3 13 17	7 15 19	29-66	10-102	77.6	281.7
Sept. 0	Wed.	4 13 4	9 3 47	3-41	11-595	108.6	312.7
Oct. 0	Fri.	5 12 18	10 9 4	6-08	12-072	22.7	342.7
Nov. 0	Mon	6 13 1	11 27 32	9-83	13-565	53.7	373.7
Dec. 0	Wed.	7 13 13	1 2 50	12-49	14-041	83.7	403.7
2040							
Jan. 0	Sat.	8 14 41	2 21 18	16-24	15-534	114.7	434.7
Feb. 0	Tues.	9 16 17	4 9 46	19-99	17-027	29.8	465.7
Mar. 0	Wed.	10 15 36	5 1 53	21-57	16-488	58.8	494.7
Apr. 0	Sat.	11 16 28	6 20 21	25-32	17-981	89.8	525.7
May 0	Mon.	0 15 51	7 25 38	27-98	18-458	4.0	555.7
June 0	Thur.	1 15 45	9 14 6	1-73	19-950	35.0	2.8
July 0	Sat.	2 14 25	10 19 24	4-39	20-427	65.0	32.8
Aug. 0	Tues.	3 14 0	0 7 52	8-15	21-920	96.0	63.8
Sept. 0	Fri.	4 13 48	1 26 20	11-40	23-413	11.1	94.8
Oct. 0	Sun.	5 13 2	3 1 37	14-56	23-890	41.1	124.8
Nov. 0	Wed.	6 13 45	4 20 5	18-31	25-382	72.1	155.8
Dec. 0	Fri.	7 13 58	5 25 23	20-97	25-859	102.1	185.8
2041							
Jan. 0	Mon.	8 15 29	7 13 51	24-72	27-352	17.2	216.8
Feb. 0	Thur.	9 17 3	9 2 19	28-48	28-845	48.2	247.8
Mar. 0	Thur.	10 15 29	9 11 15	28-96	27-290	76.2	275.8
Apr. 0	Sun.	11 16 13	10 29 43	2-71	28-783	107.2	306.8
May 0	Tues.	0 15 36	0 5 0	5-37	29-260	21.3	336.8
June 0	Fri.	1 15 30	1 23 28	9-13	0-752	52.3	367.8
July 0	Sun.	2 14 10	2 28 46	11-79	1-229	82.3	397.8
Aug. 0	Wed.	3 13 45	4 17 14	15-54	2-722	113.3	428.8
Sept. 0	Sat.	4 13 33	6 5 42	19-29	4-215	28.5	459.8
Oct. 0	Mon.	5 12 47	7 10 59	21-35	4-692	58.5	489.8
Nov. 0	Thur.	6 13 30	8 29 27	25-70	6-184	89.5	520.8
Dec. 0	Sat.	7 13 42	10 4 45	28-37	6-661	3.6	550.8
2042							
Jan. 0	Tues.	8 15 13	11 23 13	2-12	8-154	34.6	581.8
Feb. 0	Fri.	9 16 47	1 11 41	5-87	9-647	65.6	28.8
Mar. 0	Fri.	10 15 5	1 20 37	6-35	8-092	93.6	56.8
Apr. 0	Mon.	11 15 58	3 9 5	10-10	9-585	8.7	87.8
May 0	Wed.	0 15 21	4 14 23	12-77	10-062	38.7	117.8
June 0	Sat.	1 15 16	6 2 51	16-52	11-554	69.7	148.8
July 0	Mon.	2 13 56	7 8 8	19-18	12-031	99.7	178.8
Aug. 0	Thur.	3 13 39	8 26 36	22-93	13-524	14.8	209.8
Sept. 0	Sun.	4 13 18	10 15 4	26-68	15-017	45.8	240.8
Oct. 0	Tues.	5 12 31	11 20 22	29-35	15-494	75.8	270.8
Nov. 0	Fri.	6 13 14	1 8 50	3-10	16-986	106.8	301.8
Dec. 0	Sun.	7 13 26	2 14 7	5-76	17-463	21.0	331.8
Dec. 31	Wed.	8 14 58	4 2 35	9-51	18-956	52.0	362.8

# EPHEMERIS

Planets : 2039-2042

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2039</b>								
Jan. 0	7 26 <sup>8</sup>	8 7 <sup>8</sup>	4 6 <sup>9</sup>	5 4 <sup>2</sup>	3 3 <sup>0</sup>	0 4 <sup>1</sup>	9 28 <sup>6</sup>	2 6 <sup>4</sup>
Feb. 0	8 19 <sup>7</sup>	9 1 <sup>0</sup>	4 4 <sup>1</sup>	5 3 <sup>7</sup>	3 1 <sup>7</sup>	0 4 <sup>2</sup>	9 29 <sup>0</sup>	2 4 <sup>8</sup>
Mar. 0	9 10 <sup>9</sup>	9 22 <sup>3</sup>	4 0 <sup>5</sup>	5 1 <sup>9</sup>	3 0 <sup>7</sup>	0 4 <sup>1</sup>	9 29 <sup>7</sup>	2 3 <sup>3</sup>
Apr. 0	10 4 <sup>6</sup>	10 16 <sup>2</sup>	3 27 <sup>6</sup>	4 29 <sup>5</sup>	3 0 <sup>3</sup>	0 5 <sup>9</sup>	10 0 <sup>5</sup>	2 1 <sup>7</sup>
May 0	10 27 <sup>8</sup>	11 9 <sup>2</sup>	3 27 <sup>4</sup>	4 27 <sup>8</sup>	3 0 <sup>7</sup>	0 7 <sup>1</sup>	10 1 <sup>3</sup>	2 0 <sup>1</sup>
June 0	11 21 <sup>4</sup>	0 2 <sup>5</sup>	3 29 <sup>8</sup>	4 27 <sup>5</sup>	3 1 <sup>8</sup>	0 8 <sup>1</sup>	10 1 <sup>8</sup>	1 28 <sup>4</sup>
July 0	0 13 <sup>5</sup>	0 24 <sup>2</sup>	4 4 <sup>2</sup>	4 28 <sup>7</sup>	3 3 <sup>4</sup>	0 8 <sup>9</sup>	10 2 <sup>0</sup>	1 26 <sup>8</sup>
Aug. 0	1 5 <sup>2</sup>	1 15 <sup>1</sup>	4 10 <sup>2</sup>	5 1 <sup>3</sup>	3 5 <sup>3</sup>	0 9 <sup>1</sup>	10 1 <sup>7</sup>	1 25 <sup>2</sup>
Sept. 0	1 25 <sup>1</sup>	2 3 <sup>8</sup>	4 16 <sup>7</sup>	5 4 <sup>7</sup>	3 7 <sup>1</sup>	0 8 <sup>9</sup>	10 1 <sup>1</sup>	1 23 <sup>5</sup>
Oct. 0	2 11 <sup>6</sup>	2 18 <sup>4</sup>	4 23 <sup>2</sup>	5 8 <sup>2</sup>	3 8 <sup>3</sup>	0 8 <sup>2</sup>	10 0 <sup>5</sup>	1 21 <sup>9</sup>
Nov. 0	2 23 <sup>8</sup>	2 26 <sup>8</sup>	4 29 <sup>3</sup>	5 12 <sup>1</sup>	3 9 <sup>0</sup>	0 7 <sup>4</sup>	10 0 <sup>0</sup>	1 20 <sup>3</sup>
Dec. 0	2 27 <sup>1</sup>	2 24 <sup>2</sup>	5 4 <sup>0</sup>	5 15 <sup>0</sup>	3 8 <sup>8</sup>	0 6 <sup>7</sup>	9 29 <sup>9</sup>	1 18 <sup>7</sup>
<b>2040</b>								
Jan. 0	2 18 <sup>4</sup>	2 12 <sup>8</sup>	5 7 <sup>0</sup>	5 16 <sup>7</sup>	3 7 <sup>8</sup>	0 6 <sup>3</sup>	10 0 <sup>0</sup>	1 17 <sup>1</sup>
Feb. 0	2 9 <sup>2</sup>	2 8 <sup>9</sup>	5 7 <sup>1</sup>	5 16 <sup>9</sup>	3 6 <sup>5</sup>	0 6 <sup>5</sup>	10 0 <sup>4</sup>	1 15 <sup>5</sup>
Mar. 0	2 10 <sup>9</sup>	2 15 <sup>0</sup>	5 4 <sup>6</sup>	5 15 <sup>6</sup>	3 5 <sup>4</sup>	0 7 <sup>1</sup>	10 1 <sup>1</sup>	1 14 <sup>0</sup>
Apr. 0	2 20 <sup>9</sup>	2 27 <sup>4</sup>	5 0 <sup>8</sup>	5 13 <sup>3</sup>	3 4 <sup>9</sup>	0 8 <sup>6</sup>	10 1 <sup>9</sup>	1 12 <sup>3</sup>
May 0	3 4 <sup>6</sup>	3 12 <sup>3</sup>	4 28 <sup>0</sup>	5 11 <sup>2</sup>	3 5 <sup>2</sup>	0 9 <sup>2</sup>	10 2 <sup>7</sup>	1 10 <sup>7</sup>
June 0	3 21 <sup>0</sup>	3 29 <sup>4</sup>	4 27 <sup>7</sup>	5 10 <sup>3</sup>	3 6 <sup>2</sup>	0 10 <sup>2</sup>	10 3 <sup>2</sup>	1 9 <sup>1</sup>
July 0	4 8 <sup>1</sup>	4 17 <sup>0</sup>	4 29 <sup>0</sup>	5 10 <sup>8</sup>	3 7 <sup>8</sup>	0 11 <sup>0</sup>	10 3 <sup>4</sup>	1 7 <sup>5</sup>
Aug. 0	4 26 <sup>8</sup>	5 6 <sup>1</sup>	5 4 <sup>6</sup>	5 12 <sup>8</sup>	3 9 <sup>7</sup>	0 11 <sup>3</sup>	10 3 <sup>1</sup>	1 5 <sup>9</sup>
Sept. 0	5 16 <sup>3</sup>	5 26 <sup>1</sup>	5 19 <sup>4</sup>	5 15 <sup>9</sup>	3 11 <sup>5</sup>	0 11 <sup>1</sup>	10 2 <sup>5</sup>	1 4 <sup>2</sup>
Oct. 0	6 6 <sup>1</sup>	6 16 <sup>3</sup>	5 16 <sup>8</sup>	5 19 <sup>6</sup>	3 12 <sup>8</sup>	0 10 <sup>5</sup>	10 1 <sup>9</sup>	1 2 <sup>6</sup>
Nov. 0	6 27 <sup>4</sup>	7 8 <sup>0</sup>	5 23 <sup>1</sup>	5 23 <sup>2</sup>	3 13 <sup>6</sup>	0 9 <sup>7</sup>	10 1 <sup>4</sup>	1 1 <sup>0</sup>
Dec. 0	7 18 <sup>9</sup>	7 29 <sup>9</sup>	5 29 <sup>3</sup>	5 26 <sup>4</sup>	3 13 <sup>5</sup>	0 8 <sup>9</sup>	10 1 <sup>3</sup>	0 29 <sup>4</sup>
<b>2041</b>								
Jan. 0	8 11 <sup>9</sup>	8 23 <sup>3</sup>	6 3 <sup>9</sup>	5 28 <sup>7</sup>	3 12 <sup>6</sup>	0 8 <sup>5</sup>	10 1 <sup>4</sup>	0 27 <sup>7</sup>
Feb. 0	9 5 <sup>6</sup>	9 17 <sup>3</sup>	6 6 <sup>9</sup>	5 29 <sup>5</sup>	3 11 <sup>3</sup>	0 8 <sup>6</sup>	10 1 <sup>8</sup>	0 26 <sup>1</sup>
Mar. 0	9 27 <sup>4</sup>	10 9 <sup>2</sup>	6 7 <sup>0</sup>	5 28 <sup>8</sup>	3 10 <sup>2</sup>	0 9 <sup>2</sup>	10 2 <sup>5</sup>	0 24 <sup>6</sup>
Apr. 0	10 21 <sup>8</sup>	11 3 <sup>5</sup>	6 4 <sup>5</sup>	5 28 <sup>8</sup>	3 9 <sup>5</sup>	0 10 <sup>2</sup>	10 3 <sup>2</sup>	0 22 <sup>9</sup>
May 0	11 15 <sup>1</sup>	11 26 <sup>6</sup>	6 0 <sup>7</sup>	5 24 <sup>6</sup>	3 9 <sup>7</sup>	0 11 <sup>6</sup>	10 4 <sup>0</sup>	0 21 <sup>3</sup>
June 0	0 8 <sup>7</sup>	0 19 <sup>8</sup>	5 27 <sup>9</sup>	5 23 <sup>0</sup>	3 10 <sup>6</sup>	0 12 <sup>6</sup>	10 4 <sup>5</sup>	0 19 <sup>7</sup>
July 0	1 0 <sup>7</sup>	1 11 <sup>4</sup>	5 27 <sup>6</sup>	5 22 <sup>9</sup>	3 12 <sup>1</sup>	0 13 <sup>4</sup>	10 4 <sup>7</sup>	0 18 <sup>1</sup>
Aug. 0	1 22 <sup>4</sup>	2 2 <sup>5</sup>	6 0 <sup>0</sup>	5 24 <sup>3</sup>	3 14 <sup>0</sup>	0 13 <sup>7</sup>	10 4 <sup>4</sup>	0 16 <sup>6</sup>
Sept. 0	2 12 <sup>8</sup>	2 22 <sup>1</sup>	6 4 <sup>6</sup>	5 27 <sup>0</sup>	3 15 <sup>9</sup>	0 13 <sup>6</sup>	10 3 <sup>8</sup>	0 14 <sup>8</sup>
Oct. 0	3 1 <sup>0</sup>	3 9 <sup>3</sup>	6 10 <sup>2</sup>	6 0 <sup>4</sup>	3 17 <sup>3</sup>	0 12 <sup>8</sup>	10 3 <sup>2</sup>	0 13 <sup>2</sup>
Nov. 0	3 17 <sup>2</sup>	3 23 <sup>7</sup>	6 16 <sup>8</sup>	6 4 <sup>1</sup>	3 18 <sup>2</sup>	0 12 <sup>1</sup>	10 2 <sup>7</sup>	0 11 <sup>6</sup>
Dec. 0	3 29 <sup>0</sup>	4 2 <sup>4</sup>	6 23 <sup>4</sup>	6 7 <sup>5</sup>	3 18 <sup>2</sup>	0 11 <sup>4</sup>	10 2 <sup>6</sup>	0 10 <sup>0</sup>
<b>2042</b>								
Jan. 0	4 3 <sup>4</sup>	4 1 <sup>4</sup>	6 29 <sup>5</sup>	6 10 <sup>2</sup>	3 17 <sup>4</sup>	0 10 <sup>8</sup>	10 2 <sup>7</sup>	0 8 <sup>4</sup>
Feb. 0	3 26 <sup>2</sup>	3 20 <sup>3</sup>	7 4 <sup>5</sup>	6 11 <sup>6</sup>	3 16 <sup>2</sup>	0 10 <sup>8</sup>	10 3 <sup>1</sup>	0 6 <sup>7</sup>
Mar. 0	3 16 <sup>3</sup>	3 14 <sup>1</sup>	7 7 <sup>2</sup>	6 11 <sup>5</sup>	3 15 <sup>0</sup>	0 11 <sup>6</sup>	10 3 <sup>8</sup>	0 5 <sup>2</sup>
Apr. 0	3 14 <sup>9</sup>	3 18 <sup>0</sup>	7 7 <sup>3</sup>	6 9 <sup>8</sup>	3 14 <sup>3</sup>	0 12 <sup>4</sup>	10 4 <sup>5</sup>	0 3 <sup>6</sup>
May 0	3 22 <sup>7</sup>	3 28 <sup>7</sup>	7 4 <sup>9</sup>	6 7 <sup>6</sup>	3 14 <sup>3</sup>	0 13 <sup>6</sup>	10 5 <sup>3</sup>	0 2 <sup>0</sup>
June 0	4 6 <sup>1</sup>	4 13 <sup>6</sup>	7 1 <sup>1</sup>	6 5 <sup>8</sup>	3 15 <sup>1</sup>	0 14 <sup>7</sup>	10 5 <sup>8</sup>	0 0 <sup>4</sup>
July 0	4 21 <sup>7</sup>	5 0 <sup>3</sup>	6 28 <sup>4</sup>	6 5 <sup>0</sup>	3 16 <sup>5</sup>	0 15 <sup>5</sup>	10 6 <sup>0</sup>	11 28 <sup>8</sup>
Aug. 0	5 9 <sup>8</sup>	5 19 <sup>0</sup>	6 27 <sup>9</sup>	6 5 <sup>7</sup>	3 18 <sup>4</sup>	0 15 <sup>9</sup>	10 5 <sup>7</sup>	11 27 <sup>1</sup>
Sept. 0	5 28 <sup>2</sup>	6 9 <sup>1</sup>	7 0 <sup>4</sup>	6 8 <sup>0</sup>	3 20 <sup>2</sup>	0 15 <sup>7</sup>	10 5 <sup>1</sup>	11 25 <sup>5</sup>
Oct. 0	6 19 <sup>2</sup>	6 29 <sup>6</sup>	7 4 <sup>7</sup>	6 11 <sup>0</sup>	3 21 <sup>8</sup>	0 15 <sup>2</sup>	10 4 <sup>5</sup>	11 23 <sup>9</sup>
Nov. 0	7 11 <sup>0</sup>	7 21 <sup>9</sup>	7 10 <sup>7</sup>	6 14 <sup>6</sup>	3 22 <sup>8</sup>	0 14 <sup>4</sup>	10 4 <sup>0</sup>	11 22 <sup>2</sup>
Dec. 0	8 3 <sup>1</sup>	8 14 <sup>5</sup>	7 17 <sup>4</sup>	6 18 <sup>2</sup>	3 22 <sup>9</sup>	0 13 <sup>5</sup>	10 3 <sup>9</sup>	11 20 <sup>7</sup>
Dec. 31	8 26 <sup>8</sup>	9 8 <sup>3</sup>	7 24 <sup>2</sup>	6 21 <sup>3</sup>	3 22 <sup>3</sup>	0 12 <sup>8</sup>	10 4 <sup>0</sup>	11 19 <sup>0</sup>

## 2043-2046: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2043							
Jan. 0	Wed.	8 14 58	4 2 35	9-51	18-956	d	d
Feb. 0	Sat.	9 16 31	5 21 5	13-26	20-449	52-0	362-8
Mar. 0	Sat.	10 14 49	5 29 59	13-75	18-894	83-0	393-8
Apr. 0	Tues.	11 15 43	7 18 27	17-50	20-887	111-0	421-8
May 0	Thur.	0 15 6	8 23 45	20-16	20-863	26-1	455-8
June 0	Sun.	1 15 1	10 12 13	23-91	22-356	56-1	482-8
July 0	Tues.	2 13 41	11 17 30	26-37	22-833	87-1	513-8
Aug. 0	Fri.	3 13 16	1 5 58	0-33	24-326	1-2	543-8
Sept. 0	Mon.	4 13 3	2 24 26	4-03	25-819	32-2	574-8
Oct. 0	Wed.	5 12 16	3 29 41	6-74	26-296	63-2	21-9
Nov. 0	Sat.	6 12 59	5 18 12	10-49	27-788	93-2	51-9
Dec. 0	Mon	7 13 11	6 23 29	13-15	28-265	8-3	82-9
						38-3	112-9
2044							
Jan. 0	Thur.	8 14 42	8 11 57	16-90	29-758	d	d
Feb. 0	Sun.	9 16 16	10 0 25	20-66	1-251	69-3	143-9
Mar. 0	Mon.	10 15 34	10 22 32	22-23	0-712	100-3	174-9
Apr. 0	Thur.	11 16 27	0 11 0	25-95	2-204	13-4	203-9
May 0	Sat.	0 15 49	1 16 18	28-64	2-681	44-4	234-9
June 0	Tues.	1 15 44	3 4 46	2-39	4-174	74-4	264-9
July 0	Thur.	2 14 24	4 10 3	5-06	4-651	105-4	295-9
Aug. 0	Sun.	3 13 58	5 28 31	8-81	6-144	19-6	325-9
Sept. 0	Wed.	4 13 46	7 16 59	12-56	7-636	50-6	356-9
Oct. 0	Fri.	5 13 0	8 22 17	15-22	8-113	81-6	387-9
Nov. 0	Mon.	6 13 44	10 10 45	18-97	9-006	111-6	417-9
Dec. 0	Wed.	7 13 56	11 16 2	21-64	10-083	26-7	448-9
						56-7	478-9
2045							
Jan. 0	Sat.	8 15 27	1 4 30	25-39	11-576	d	d
Feb. 0	Tues.	9 17 1	2 22 58	29-14	13-069	87-7	509-9
Mar. 0	Tues.	10 15 19	3 1 54	29-62	11-514	2-8	540-9
Apr. 0	Fri.	11 16 12	4 20 22	3-37	13-006	30-8	568-9
May 0	Sun.	0 15 35	5 25 40	6-04	13-483	61-8	16-0
June 0	Wed.	1 15 29	7 14 8	9-79	14-976	91-8	46-0
July 0	Fri.	2 14 9	8 19 25	12-45	15-453	6-9	77-0
Aug. 0	Mon.	3 13 44	10 7 53	16-20	16-946	36-9	107-0
Sept. 0	Thur.	4 13 31	11 26 21	19-95	18-438	67-9	138-0
Oct. 0	Sat	5 12 45	1 1 39	22-62	18-915	98-9	169-0
Nov. 0	Tues.	6 13 28	2 20 7	26-37	20-408	13-1	199-0
Dec. 0	Thur.	7 13 40	3 25 24	29-03	20-835	44-1	230-0
						74-1	260-0
2046							
Jan. 0	Sun.	8 15 12	5 13 52	2-78	22-378	d	d
Feb. 0	Wed.	9 16 45	7 2 20	6-53	23-871	105-1	291-0
Mar. 0	Wed.	10 15 3	7 11 17	7-02	22-316	20-2	322-0
Apr. 0	Sat.	11 15 57	8 29 45	10-77	23-808	48-2	350-0
May 0	Mon.	0 15 20	10 5 2	13-33	24-285	79-2	381-0
June 0	Thur	1 15 14	11 23 30	17-18	25-778	109-2	411-0
July 0	Sat.	2 13 54	0 28 48	19-84	26-255	24-3	442-0
Aug. 0	Tues.	3 13 29	2 17 16	23-60	27-748	54-3	472-0
Sept. 0	Fri.	4 13 16	4 5 44	27-35	29-240	85-3	503-0
Oct. 0	Sun.	5 12 30	5 11 1	0-01	29-717	0-4	534-0
Nov. 0	Wed.	6 13 13	6 29 29	3-76	1-210	30-4	564-0
Dec. 0	Fri.	7 13 25	8 4 47	6-42	1-687	61-4	11-1
Dec. 31	Mon.	8 14 56	9 23 15	10-17	3-180	91-4	41-1
						6-5	72-1

# EPHEMERIS

Planets: 2043-2046

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2043</b>								
Jan. 0	8 26.8	9 8.3	7 24.2	6 21.3	3 22.3	0 12.8	10 4.0	11 19.0
Feb. 0	9 20.9	10 2.8	8 0.7	6 23.2	3 21.1	0 12.9	10 4.4	11 17.4
Mar. 0	10 13.0	10 24.9	8 5.4	6 23.7	3 19.9	0 13.6	10 5.1	11 15.9
Apr. 0	11 7.5	11 19.1	8 8.6	6 22.6	3 19.0	0 14.6	10 5.8	11 14.2
May 0	0 0.6	0 11.9	8 9.1	6 20.7	3 18.9	0 15.7	10 6.6	11 12.7
June 0	0 23.8	1 4.7	8 6.8	6 18.4	3 19.6	0 16.7	10 7.1	11 11.0
July 0	1 15.5	1 25.9	8 3.1	6 17.1	3 20.9	0 17.0	10 7.3	11 9.4
Aug. 0	2 6.9	2 17.0	8 0.0	6 17.3	3 22.7	0 16.9	10 7.0	11 7.8
Sept. 0	2 27.3	3 6.9	7 29.6	6 19.0	3 24.6	0 16.4	10 6.4	11 6.1
Oct. 0	3 16.1	3 25.0	8 1.8	6 21.5	3 26.3	0 15.6	10 5.8	11 4.5
Nov. 0	4 4.0	4 11.9	8 6.5	6 25.2	3 27.4	0 14.8	10 5.3	11 2.9
Dec. 0	4 19.3	4 25.9	8 12.4	6 28.7	3 27.7	0 14.2	10 5.2	11 1.3
<b>2044</b>								
Jan. 0	5 1.5	5 5.3	8 19.5	7 2.1	3 27.1	0 14.2	10 5.3	10 29.7
Feb. 0	5 7.0	5 5.7	8 26.6	7 4.5	3 26.0	0 14.7	10 5.7	10 28.0
Mar. 0	5 2.1	4 26.2	9 2.9	7 5.4	3 24.7	0 15.5	10 6.4	10 26.5
Apr. 0	4 20.7	4 18.0	9 8.2	7 5.0	3 23.8	0 16.7	10 7.1	10 24.9
May 0	4 18.1	4 20.6	9 11.8	7 3.3	3 23.6	0 17.8	10 7.9	10 23.3
June 0	4 24.9	5 1.4	9 12.7	7 1.0	3 24.2	0 18.8	10 8.4	10 21.7
July 0	5 8.3	5 18.0	9 10.9	6 29.3	3 25.4	0 19.1	10 8.6	10 20.1
Aug. 0	5 25.1	6 4.0	9 7.0	6 28.8	3 27.2	0 19.1	10 8.3	10 18.4
Sept. 0	6 13.8	6 24.0	9 3.8	6 29.9	3 29.1	0 18.6	10 7.7	10 16.8
Oct. 0	7 4.2	7 14.8	9 3.0	7 2.2	4 0.8	0 17.7	10 7.1	10 15.2
Nov. 0	7 26.3	8 7.6	9 5.2	7 5.4	4 2.0	0 16.9	10 6.6	10 13.6
Dec. 0	8 19.0	9 0.5	9 9.6	7 9.0	4 2.4	0 16.4	10 6.5	10 12.0
<b>2045</b>								
Jan. 0	9 13.0	9 24.8	9 15.8	7 12.5	4 2.0	0 16.3	10 6.6	10 10.3
Feb. 0	10 7.5	10 19.4	9 23.0	7 15.3	4 0.9	0 16.8	10 7.0	10 8.7
Mar. 0	10 29.6	11 11.2	9 27.7	7 16.8	3 29.7	0 17.6	10 7.7	10 7.1
Apr. 0	11 23.5	0 4.9	10 6.7	7 16.9	3 28.6	0 18.9	10 8.4	10 5.5
May 0	0 16.1	0 27.1	10 12.4	7 15.6	3 28.2	0 20.0	10 9.2	10 3.9
June 0	1 8.7	1 19.3	10 16.6	7 13.5	3 28.7	0 21.1	10 9.7	10 2.3
July 0	1 29.7	2 10.0	10 18.3	7 11.5	3 29.9	0 22.1	10 9.9	10 0.7
Aug. 0	2 20.7	3 0.6	10 17.0	7 10.4	4 1.6	0 23.6	10 9.6	9 29.0
Sept. 0	3 11.0	3 20.5	10 13.4	7 10.8	4 3.5	0 22.6	10 9.0	9 27.4
Oct. 0	3 29.9	4 9.0	10 9.8	7 12.8	4 5.2	0 22.2	10 8.4	9 25.8
Nov. 0	4 18.5	4 27.2	10 8.4	7 15.6	4 6.6	0 21.4	10 7.9	9 24.2
Dec. 0	5 5.6	5 13.6	10 10.0	7 19.1	4 7.1	0 20.6	10 7.8	9 22.6
<b>2046</b>								
Jan. 0	5 21.6	5 28.3	10 14.4	7 22.7	4 6.8	0 20.0	10 7.9	9 20.9
Feb. 0	6 4.4	6 8.9	10 20.6	7 25.6	4 5.8	0 19.9	10 8.4	9 19.3
Mar. 0	6 11.2	6 11.7	10 27.1	7 27.7	4 4.6	0 20.3	10 9.0	9 17.8
Apr. 0	6 9.2	6 4.3	11 4.6	7 28.5	4 3.4	0 21.0	10 9.8	9 16.2
May 0	5 28.8	5 24.6	11 11.6	7 27.7	4 3.0	0 22.1	10 10.4	9 14.6
June 0	5 23.8	5 25.6	11 17.9	7 25.8	4 3.3	0 23.2	10 10.7	9 12.9
July 0	6 0.3	6 5.5	11 22.5	7 23.7	4 4.4	0 24.2	10 10.7	9 11.3
Aug. 0	6 13.1	6 21.4	11 24.9	7 22.1	4 6.0	0 24.7	10 10.3	9 9.7
Sept. 0	7 0.8	7 10.5	11 24.3	7 22.0	4 7.9	0 24.8	10 9.6	9 8.0
Oct. 0	7 20.6	8 1.1	11 21.1	7 23.3	4 9.7	0 24.4	10 8.9	9 6.5
Nov. 0	8 12.9	8 24.1	11 17.2	7 25.8	4 11.1	0 23.6	10 8.5	9 4.8
Dec. 0	9 5.5	9 17.1	11 15.1	7 29.1	4 11.8	0 22.8	10 8.4	9 3.2
Dec. 31	9 29.6	10 11.3	11 16.2	8 2.8	4 11.7	0 22.3	10 8.8	9 1.6

## 2047-2050: Sun, Moon

## ADVANCE

Date	Week day	True Sun	Mean Moon	Moon's Anomaly	Tithi	Days from Conjunction	
						Mercury	Venus
2047							
Jan. 0	Mon.	8 14 56	9 23 15	10-17	3-180	d 65	d 72-1
Feb. 0	Thur.	9 16 30	11 11 43	13-93	4-672	37-5	103-1
Mar. 0	Thur.	10 14 48	11 20 39	14-41	3-118	65-5	131-1
Apr. 0	Sun.	11 15 41	1 9 7	18-16	4-110	96-5	162-1
May 0	Tues.	0 15 5	2 14 24	20-82	5-087	10-7	192-1
June 0	Fri.	1 15 0	4 2 52	24-57	6-590	41-7	223-1
July 0	Sun.	2 13 40	5 8 10	27-24	7-057	71-7	253-1
Aug. 0	Wed.	3 13 14	6 26 38	0-99	8-550	102-7	284-1
Sept. 0	Sat.	4 13 1	8 15 6	4-74	10-042	17-8	315-1
Oct. 0	Mon.	5 12 15	9 20 23	7-40	10-519	47-8	345-1
Nov. 0	Thur.	6 12 58	11 8 51	11-15	12-012	78-8	376-1
Dec. 0	Sat.	7 13 9	0 14 9	13-82	12-489	108-8	406-1
2048							
Jan. 0	Tues.	8 14 40	2 2 37	17-57	13-982	23-9	437-1
Feb. 0	Fri.	9 16 14	3 21 5	21-32	15-474	54-9	468-1
Mar. 0	Sat.	10 15 32	4 13 12	22-89	14-935	83-9	497-1
Apr. 0	Tues.	11 16 25	6 1 40	26-64	16-428	114-9	528-1
May 0	Thur.	0 15 48	7 6 57	29-31	18-905	29-0	558-1
June 0	Sun.	1 15 42	8 25 25	3-06	18-398	60-0	5-2
July 0	Tues.	2 14 22	10 0 43	5-72	18-875	90-0	35-2
Aug. 0	Fri.	3 13 57	11 19 11	9-47	20-367	5-2	66-2
Sept. 0	Mon.	4 13 45	1 7 39	13-22	21-860	36-2	97-2
Oct. 0	Wed.	5 12 59	2 12 56	15-88	22-337	66-2	127-2
Nov. 0	Sat.	6 13 42	4 1 24	19-64	23-830	97-2	158-2
Dec. 0	Mon.	7 13 54	5 6 42	22-30	24-307	11-3	188-2
2049							
Jan. 0	Thur.	8 15 26	6 25 10	26-05	25-800	42-3	219-2
Feb. 0	Sun.	9 17 0	8 13 38	29-80	27-292	73-3	250-2
Mar. 0	Sun.	10 15 17	8 22 34	0-29	25-737	101-3	273-2
Apr. 0	Wed.	11 16 10	10 11 2	4-04	27-230	16-4	300-2
May 0	Fri.	0 15 33	11 16 19	6-70	27-707	46-4	339-2
June 0	Mon.	1 15 28	1 4 47	10-45	29-200	77-4	370-2
July 0	Wed.	2 14 7	2 10 5	13-11	29-677	107-4	400-2
Aug. 0	Sat.	3 13 42	3 28 83	16-86	1-169	22-5	431-2
Sept. 0	Tues.	4 13 30	5 17 1	20-62	2-662	53-5	462-2
Oct. 0	Thur.	5 12 44	6 22 18	23-28	3-1-9	83-5	492-2
Nov. 0	Sun.	6 13 27	8 10 46	27-03	4-632	114-5	523-2
Dec. 0	Tues.	7 13 39	9 16 4	29-69	5-109	28-6	553-2
2050							
Jan. 0	Fri.	8 15 10	11 4 32	3-44	6-601	59-6	0-3
Feb. 0	Mon.	9 16 44	0 23 0	7-19	8-094	90-6	31-3
Mar. 0	Mon.	10 15 2	1 1 56	7-68	6-539	2-8	59-3
Apr. 0	Thur.	11 15 55	2 20 24	11-43	8-032	33-8	90-3
May 0	Sat.	0 15 18	3 25 42	14-9	8-509	63-8	120-3
June 0	Tues.	1 15 13	5 14 10	17-84	10-002	94-8	151-3
July 0	Thur.	2 13 53	6 19 27	20-51	10-479	8-9	181-3
Aug. 0	Sun.	3 13 28	8 7 55	24-26	11-971	39-9	212-3
Sept. 0	Wed.	4 13 15	9 26 23	28-01	13-464	70-9	243-3
Oct. 0	Fri.	5 12 28	11 1 41	0-67	15-941	100-9	273-3
Nov. 0	Mon.	6 13 11	0 20 9	4-42	15-434	16-0	304-3
Dec. 0	Wed.	7 13 23	1 25 26	7-09	15-911	46-0	334-3

# EPHEMERIS

Planets : 2047-2050

Date	Mars	Mars on 15th	Jupiter	Saturn	Herschel	Neptune	Pluto	Rahu
<b>2047</b>								
Jan. 0	9 29.6	10 11.3	11 16.2	8 2.8	4 11.7	0 22.3	10 8.8	9 1.6
Feb. 0	10 23.6	11 5.3	11 20.3	8 6.1	4 10.7	0 23.0	10 9.6	8 29.9
Mar. 0	11 15.3	11 26.6	11 25.8	8 8.4	4 9.6	0 22.4	10 10.2	8 28.5
Apr. 0	0 8.5	0 19.5	0 2.8	8 9.8	4 8.3	0 23.1	10 11.0	8 26.8
May 0	1 0.4	1 11.0	0 10.0	8 9.5	4 7.8	0 24.3	10 11.6	8 25.2
June 0	1 22.2	2 2.5	0 17.3	8 7.9	4 7.7	0 25.5	10 11.9	8 23.6
July 0	2 12.9	2 22.5	0 23.5	8 5.7	4 8.9	0 26.5	10 11.9	8 22.0
Aug. 0	3 3.2	3 12.9	0 28.5	8 3.9	4 10.5	0 27.0	10 11.5	8 20.4
Sept. 0	3 23.2	4 2.7	1 1.5	8 3.2	4 12.4	0 27.1	10 10.8	8 18.7
Oct. 0	4 12.1	4 21.4	1 1.5	8 4.0	4 14.2	0 26.7	10 10.1	8 17.1
Nov. 0	5 1.4	5 10.4	0 28.6	8 6.2	4 15.7	0 25.9	10 9.7	8 15.5
Dec. 0	5 19.6	5 28.4	0 24.6	8 9.3	4 16.5	0 25.2	10 9.6	8 13.9
<b>2048</b>								
Jan. 0	6 7.7	6 16.1	0 22.0	8 12.9	4 16.5	0 24.5	10 10.0	8 12.2
Feb. 0	6 24.8	7 2.4	0 22.8	8 16.4	4 15.7	0 24.3	10 10.9	8 10.6
Mar. 0	7 9.0	7 15.2	0 25.6	8 19.0	4 14.5	0 24.7	10 11.4	8 9.1
Apr. 0	7 20.6	7 23.8	1 0.9	8 20.8	4 13.2	0 25.4	10 12.2	8 7.5
May 0	7 24.8	7 23.2	1 7.4	8 21.1	4 12.5	0 26.4	10 12.8	8 5.9
June 0	7 18.8	7 13.7	1 14.5	8 20.0	4 12.6	0 27.6	10 13.1	8 4.2
July 0	7 10.2	7 10.0	1 21.5	8 18.0	4 13.5	0 28.6	10 13.1	8 2.7
Aug. 0	7 12.7	7 17.7	1 28.0	8 15.9	4 15.0	0 29.1	10 12.7	8 1.0
Sept. 0	7 25.0	8 3.3	2 3.2	8 14.6	4 16.9	0 29.3	10 12.0	7 29.4
Oct. 0	8 12.5	8 22.4	2 6.4	8 14.9	4 18.7	0 28.9	10 11.3	7 27.8
Nov. 0	9 3.4	9 14.2	2 6.8	8 16.5	4 20.3	0 28.2	10 9.9	7 26.1
Dec. 0	9 25.1	10 6.4	2 4.4	8 19.4	4 21.2	0 27.4	10 9.8	7 24.5
<b>2049</b>								
Jan. 0	10 18.3	10 29.6	2 0.3	8 22.9	4 21.4	0 26.7	10 11.2	7 22.9
Feb. 0	11 11.5	11 22.5	1 27.3	8 26.5	4 20.5	0 26.5	10 12.1	7 21.3
Mar. 0	0 1.9	0 12.7	1 27.2	8 29.3	4 19.4	0 26.8	10 12.6	7 19.7
Apr. 0	0 24.1	1 4.6	1 29.9	9 1.7	4 18.1	0 27.5	10 13.4	7 18.1
May 0	1 14.9	1 25.1	2 4.6	9 2.6	4 17.3	0 28.6	10 14.0	7 16.5
June 0	2 5.8	2 15.9	2 10.9	9 2.0	4 17.3	0 29.8	10 14.3	7 14.9
July 0	2 25.7	3 5.4	2 17.5	9 0.2	4 18.1	1 0.8	10 14.3	7 13.3
Aug. 0	3 15.7	3 25.3	2 24.5	8 28.0	4 19.6	1 1.4	10 13.9	7 11.6
Sept. 0	4 5.5	4 15.1	3 0.9	8 26.4	4 21.4	1 1.5	10 13.2	7 10.0
Oct. 0	4 24.6	5 4.0	3 6.0	8 26.0	4 23.3	1 1.2	10 12.5	7 8.4
Nov. 0	5 14.2	5 23.7	3 9.4	8 27.2	4 24.9	1 0.5	10 12.1	7 6.7
Dec. 0	6 3.2	6 12.8	3 10.0	8 29.6	4 25.9	0 29.7	10 12.0	7 5.2
<b>2050</b>								
Jan. 0	6 22.8	7 2.4	3 7.7	9 2.9	4 26.1	0 29.0	10 12.4	7 3.5
Feb. 0	7 12.4	7 21.7	3 3.7	9 6.5	4 25.4	0 28.8	10 13.4	7 1.9
Mar. 0	7 29.7	8 8.8	3 0.9	9 9.6	4 24.4	0 29.0	10 14.5	7 0.4
Apr. 0	8 18.4	8 26.8	3 0.2	9 12.4	4 23.2	0 29.7	10 15.3	6 28.7
May 0	9 5.1	9 12.6	3 2.3	9 13.8	4 22.2	1 0.7	10 15.9	6 27.2
June 0	9 19.8	9 24.8	3 6.9	9 13.9	4 22.2	1 1.9	10 16.2	6 25.5
July 0	9 28.1	9 28.7	3 12.6	9 12.6	4 22.7	1 2.9	10 16.2	6 23.9
Aug. 0	9 26.5	9 22.7	3 19.3	9 10.3	4 24.2	1 3.5	10 15.8	6 22.3
Sept. 0	9 19.5	9 19.0	3 26.0	9 8.3	4 25.9	1 3.7	10 15.1	6 20.6
Oct. 0	9 21.4	9 26.3	4 2.1	9 7.4	4 27.8	1 3.4	10 14.4	6 19.0
Nov. 0	10 3.4	10 11.5	4 7.5	9 8.0	4 29.5	1 2.7	10 14.0	6 17.4
Dec. 0	10 20.2	10 29.5	4 10.7	9 10.0	5 0.6	1 1.9	10 13.9	6 15.8

# ADVANCE EPHEMERIS

## AYANAMSA

The longitudes of planets given in this ephemeris are *Nirayana* or *Sidereal*. In order to obtain the corresponding *Tropical* or *Sayana* longitude of the planet, the amount of *ayanamsa* for the year is to be added to the *nirayana* longitude. The table below gives the values of *ayanamsa* (mean *ayanamsa* for Jan 0) for the years 1950 to 2051 A.D.

Year	Ayanamsa	Year	Ayanamsa	Year	Ayanamsa
1950	23° 09.5	1984	23° 38.0	2018	24° 06.5
51	23 10.4	85	23 38.8	19	24 07.3
52	23 11.2	86	23 39.7	20	24 08.2
53	23 12.0	87	23 40.5	21	24 09.0
54	23 12.9	88	23 41.4	22	24 09.8
55	23 13.7	89	23 42.2	23	24 10.7
56	23 14.5	90	23 43.0	24	24 11.5
57	23 15.4	91	23 43.9	25	24 12.4
58	23 16.2	92	23 44.7	26	24 13.2
59	23 17.1	93	23 45.5	27	24 14.0
60	23 17.9	94	23 46.4	28	24 14.9
1961	23 18.7	1995	23 47.2	2029	24 15.7
62	23 19.6	96	23 48.1	30	24 16.6
63	23 20.4	97	23 48.9	31	24 17.4
64	23 21.2	98	23 49.7	32	24 18.2
65	23 22.1	1999	23 50.6	33	24 19.1
66	23 22.9	2000	23 51.4	34	24 19.9
67	23 23.8	01	23 52.3	35	24 20.7
68	23 24.6	02	23 53.1	36	24 21.6
69	23 25.4	03	23 53.9	37	24 22.4
70	23 26.3	04	23 54.8	38	24 23.3
71	23 27.1	05	23 55.6	39	24 24.1
72	23 27.9	06	23 56.4	40	24 24.9
1973	23 28.8	2007	23 57.3	2041	24 25.8
74	23 29.6	08	23 58.1	42	24 26.6
75	23 30.5	09	23 59.0	43	24 27.4
76	23 31.3	10	23 59.8	44	24 28.3
77	23 32.1	11	24 00.6	45	24 29.1
78	23 33.0	12	24 01.5	46	24 30.0
79	23 33.8	13	24 02.3	47	24 30.8
80	23 34.7	14	24 03.1	48	24 31.6
81	23 35.5	15	24 04.0	49	24 32.5
82	23 36.3	16	24 04.8	50	24 33.3
1983	23 37.2	2017	24 05.7	2051	24 34.2

### Ayanamsa for some other epochs

A.D.		A.D.		A.D.		A.D.	
1285	0 00	700	5 45	1200	12 42	1700	19 40
1300	0 12	800	7 09	1300	14 06	1800	21 04
1400	1 36	900	8 32	1400	15 29	1900	22 28
1500	2 59	1000	9 55	1500	16 53	1938	23 00
1600	4 22	1100	11 19	1600	18 17	2010	24 00

N.B. Motion of *ayanamsa* for 10 yrs.: 8'38; for 100 yrs.: 1° 23'8



# ADVANCE EPHEMERIS

## WEEK DAY

The day of week for any day of the month may be obtained from the week-day for the zero-date of that month.

Week-day on Zero-date	Week day on other dates						
Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.	Mon.
Tues.	Wed.	Thu.	Fri.	Sat.	Sun.	Mon.	Tue.
Wed.	Thu.	Fri.	Sat.	Sun.	Mon.	Tue.	Wed.
Thur.	Fri.	Sat.	Sun.	Mon.	Tue.	Wed.	Thu.
Fri.	Sat.	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.
Sat.	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
Day of month	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

**Note:** The days of week recur regularly after every 28 years in the period from 1st March 1900 to 28th February 2100 A. D.

# ADVANCE EPHEMERIS

## LONGITUDE OF THE SUN

The longitude of the Sun for any day of the month may be obtained by adding the figure from the following table for the date of the month in question to the longitude given for the zero-date of that month. The longitude thus obtained is nirayana and true for 5-30 A.M. I. S. T. or 0h Greenwich mid-night.

Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1° 1'	1 1'	1 0'	0 59'	0 58'	0 58'	0 57'	0 58'	0 58'	0 59'	0 59'	1 1'
2	2 2'	2 2'	2 0'	1 58'	1 56'	1 55'	1 54'	1 55'	1 56'	1 58'	2 0'	2 1'
3	3 4'	3 3'	3 0'	2 57'	2 54'	2 53'	2 51'	2 53'	2 54'	2 57'	3 0'	3 2'
4	4 5'	4 3'	4 0'	3 57'	3 53'	3 50'	3 48'	3 50'	3 52'	3 56'	4 0'	4 3'
5	5 6'	5 4'	5 1'	4 56'	4 51'	4 48'	4 46'	4 48'	4 50'	4 56'	5 0'	5 4'
6	6 7'	6 5'	6 1'	5 55'	5 49'	5 45'	5 43'	5 45'	5 48'	5 55'	6 0'	6 5'
7	7 8'	7 6'	7 1'	6 54'	6 47'	6 42'	6 40'	6 43'	6 46'	6 54'	7 0'	7 6'
8	8 9'	8 7'	8 1'	7 53'	7 45'	7 40'	7 37'	7 40'	7 45'	7 53'	8 1'	8 7'
9	9 11'	9 7'	9 1'	8 52'	8 43'	8 37'	8 34'	8 37'	8 43'	8 52'	9 1'	9 8'
10	10 12'	10 8'	10 1'	9 51'	9 41'	9 34'	9 32'	9 35'	9 41'	9 52'	10 1'	10 9'
11	11 13'	11 9'	11 1'	10 49'	10 39'	10 32'	10 29'	10 33'	10 40'	10 51'	11 2'	11 10'
12	12 14'	12 10'	12 0'	11 48'	11 37'	11 29'	11 26'	11 30'	11 38'	11 50'	12 2'	12 11'
13	13 15'	13 10'	13 0'	12 47'	12 35'	12 26'	12 23'	12 28'	12 36'	12 50'	13 3'	13 12'
14	14 16'	14 11'	14 0'	13 46'	13 33'	13 24'	13 20'	13 25'	13 35'	13 49'	14 3'	14 13'
15	15 17'	15 11'	15 0'	14 44'	14 30'	14 21'	14 18'	14 23'	14 33'	14 49'	15 3'	15 14'
16	16 18'	16 12'	16 0'	15 43'	15 28'	15 18'	15 15'	15 21'	15 32'	15 48'	16 4'	16 15'
17	17 19'	17 13'	16 59'	16 42'	16 26'	16 15'	16 12'	16 18'	16 30'	16 48'	17 4'	17 16'
18	18 21'	18 13'	17 59'	17 40'	17 24'	17 13'	17 9'	17 16'	17 29'	17 47'	18 5'	18 17'
19	19 22'	19 14'	18 59'	18 39'	18 21'	18 10'	18 6'	18 14'	18 27'	18 47'	19 5'	19 18'
20	20 23'	20 14'	19 58'	19 38'	19 19'	19 7'	19 4'	19 12'	19 26'	19 46'	20 6'	20 19'
21	21 24'	21 15'	20 58'	20 36'	20 17'	20 4'	20 1'	20 9'	20 25'	20 46'	21 6'	21 20'
22	22 25'	22 15'	21 57'	21 35'	21 15'	21 2'	20 58'	21 7'	21 23'	21 46'	22 7'	22 21'
23	23 26'	23 16'	22 57'	22 33'	22 12'	21 59'	21 56'	22 5'	22 22'	22 46'	23 8'	23 22'
24	24 27'	24 16'	23 56'	23 31'	23 10'	22 56'	22 53'	23 3'	23 21'	23 45'	24 8'	24 24'
25	25 28'	25 16'	24 56'	24 30'	24 8'	23 53'	23 50'	24 1'	24 20'	24 45'	25 9'	25 25'
26	26 29'	26 17'	25 55'	25 28'	25 5'	24 51'	24 48'	24 59'	25 19'	25 45'	26 10'	26 26'
27	27 30'	27 17'	26 55'	26 27'	26 3'	25 48'	25 45'	25 57'	26 18'	26 45'	27 11'	27 27'
28	28 31'	28 17'	27 54'	27 25'	27 0'	26 45'	26 42'	26 55'	27 16'	27 45'	28 12'	28 28'
29	29 32'	29 19'	28 53'	28 24'	27 58'	27 42'	27 40'	27 53'	28 15'	28 45'	29 12'	29 28'
30	30 33'	-	29 53'	29 22'	28 56'	28 40'	28 37'	28 51'	29 14'	29 45'	30 13'	30 30'
31	31 34'	-	30 52'	-	29 54'	-	29 35'	29 48'	-	30 44'	-	31 32'

# ADVANCE EPHEMERIS

## LONGITUDE OF THE MOON

The true longitude of the Moon for any moment may be obtained from the mean moon by applying corrections corresponding to the Anomaly, Tithi, etc., for that moment.

### Mean Moon and Arguments

The figures for the day of the month are to be added to the values given for the zero-date of that month.

Day of Month	Mean Moon	Moon's Anomaly	Tithi
1	0 13 11	1:09	1:016
2	0 26 21	2:18	2:032
3	1 9 32	3:27	3:048
4	1 22 42	4:36	4:064
5	2 5 53	5:44	5:079
6	2 19 3	6:53	6:095
7	3 2 14	7:62	7:111
8	3 15 25	8:71	8:127
9	3 28 35	9:80	9:143
10	4 11 46	10:89	10:159
11	4 24 56	11:98	11:175
12	5 8 7	13:07	12:191
13	5 21 18	14:15	13:207
14	6 4 28	15:24	14:223
15	6 17 39	16:33	15:238
16	7 0 49	17:42	16:254
17	7 14 0	18:51	17:270
18	7 27 10	19:60	18:286
19	8 10 21	20:69	19:302
20	8 23 32	21:78	20:318
21	9 6 42	22:86	21:334
22	9 19 53	23:95	22:350
23	10 3 3	25:04	23:366
24	10 16 14	26:13	24:382
25	10 29 25	27:22	25:397
26	11 12 35	28:31	26:413
27	11 25 46	29:40	27:439
28	0 8 56	0:49	28:445
29	0 22 7	1:57	29:461
30	1 5 17	2:66	0:477
31	1 18 28	3:75	1:493

Note :—Period of both Anomaly and Tithi is 30. When the total value of the element obtained for the date exceeds the period, 30 should be deducted from it.

# ADVANCE EPHEMERIS

## Mean Moon and Arguments—*contd.*

Values to be added for the hour of the day. Here hour is measured from 5-30 A.M. I. S. T. or 0 $\frac{1}{2}$  G. M. T.

Hour	Mean Moon	Moon's Anomaly	Tithi
1	0 0 33	0.05	0.042
2	0 1 6	0.09	0.085
3	0 1 39	0.14	0.127
4	0 2 12	0.18	0.169
5	0 2 45	0.23	0.212
6	0 3 18	0.27	0.254
7	0 3 51	0.32	0.296
8	0 4 24	0.36	0.339
9	0 4 56	0.41	0.381
10	0 5 29	0.45	0.423
11	0 6 2	0.50	0.466
12	0 6 35	0.54	0.508
13	0 7 8	0.59	0.550
14	0 7 41	0.64	0.593
15	0 8 14	0.68	0.635
16	0 8 47	0.73	0.677
17	0 9 20	0.77	0.720
18	0 9 53	0.82	0.762
19	0 10 26	0.86	0.804
20	0 10 59	0.91	0.847
21	0 11 32	0.95	0.889
22	0 12 5	1.00	0.931
23	0 12 38	1.04	0.974
24	0 13 11	1.09	1.016
10 min.	0 5	0.01	0.007
20 "	0 11	0.02	0.014
30 "	0 16	0.02	0.021
40 "	0 22	0.03	0.028
50 "	0 27	0.04	0.035
60 "	0 33	0.05	0.042

## Argument: '2 Tithi—Anomaly'

From the values of Moon's Anomaly and Tithi for the moment, a new argument "2 Tithi—Anomaly" is to be obtained. In so doing if  $2 \times \text{Tithi}$  is found to be less than the value of Anomaly, then 30 is to be added to 2 Tithi to facilitate subtraction. When ' $2 T - A$ ' exceeds 30, then 30 is to be deducted from it.

Daily motion of  $2T - A = 0.943$ .

# ADVANCE EPHEMERIS

## TRUE MOON

### Corrections to Mean Moon

Table I

Argument : Moon's Anomaly

Anomaly	Correction	Anomaly	Anomaly	Correction	Anomaly
0.0	+0 00'	30.0	3.5	+4 26'	26.5
0.1	0 08	29.9	3.6	4 32	26.4
0.2	0 17	29.8	3.7	4 37	26.3
0.3	0 25	29.7	3.8	4 43	26.2
0.4	0 34	29.6	3.9	4 48	26.1
0.5	0 42	29.5	4.0	4 53	26.0
0.6	0 51	29.4	4.1	4 58	25.9
0.7	0 59	29.3	4.2	5 03	25.8
0.8	1 08	29.2	4.3	5 08	25.7
0.9	1 16	29.1	4.4	5 13	25.6
1.0	+1 24-	29.0	4.5	+5 18-	25.5
1.1	1 32	28.9	4.6	5 22	25.4
1.2	1 41	28.8	4.7	5 26	25.3
1.3	1 49	28.7	4.8	5 30	25.2
1.4	1 57	28.6	4.9	5 34	25.1
1.5	2 05	28.5	5.0	5 38	25.0
1.6	2 13	28.4	5.1	5 41	24.9
1.7	2 20	28.3	5.2	5 44	24.8
1.8	2 28	28.2	5.3	5 48	24.7
1.9	2 36	28.1	5.4	5 51	24.6
2.0	+2 44-	28.0	5.5	+5 54-	24.5
2.1	2 51	27.9	5.6	5 57	24.4
2.2	2 59	27.8	5.7	5 59	24.3
2.3	3 06	27.7	5.8	6 02	24.2
2.4	3 13	27.6	5.9	6 04	24.1
2.5	3 20	27.5	6.0	6 06	24.0
2.6	3 27	27.4	6.1	6 08	23.9
2.7	3 34	27.3	6.2	6 10	23.8
2.8	3 41	27.2	6.3	6 11	23.7
2.9	3 48	27.1	6.4	6 12	23.6
3.0	+3 55-	27.0	6.5	+6 14-	23.5
3.1	4 01	26.9	6.6	6 15	23.4
3.2	4 08	26.8	6.7	6 16	23.3
3.3	4 14	26.7	6.8	6 16	23.2
3.4	4 20	26.6	6.9	6 17	23.1
3.5	4 26	26.5	7.0	6 17	23.0
3.6	4 32	26.4	7.1	6 18	22.9
3.7	4 37	26.3	7.2	6 18	22.8
3.8	4 43	26.2	7.3	6 17	22.7
3.9	4 48	26.1	7.4	6 17	22.6
4.0	+4 53-	26.0	7.5	+6 17-	22.5

Continued on next page

# ADVANCE EPHEMERIS

## TRUE MOON

### Corrections to Mean Moon

Table I—*contd.*

Argument : Moon's Anomaly

Anomaly	Correction	Anomaly	Anomaly	Correction	Anomaly
7.5	+6 17-	22.5	11.0	+4 28-	19.0
7.6	6 16	22.4	11.1	4 23	18.9
7.7	6 15	22.3	11.2	4 17	18.8
7.8	6 14	22.2	11.3	4 12	18.7
7.9	6 13	22.1	11.4	4 06	18.6
8.0	6 12	22.0	11.5	4 00	18.5
8.1	6 10	21.9	11.6	3 54	18.4
8.2	6 09	21.8	11.7	3 48	18.3
8.3	6 07	21.7	11.8	3 42	18.2
8.4	6 05	21.6	11.9	3 36	18.1
8.5	+6 03-	21.5	12.0	+3 30-	18.0
8.6	6 01	21.4	12.1	3 24	17.9
8.7	5 59	21.3	12.2	3 18	17.8
8.8	5 56	21.2	12.3	3 11	17.7
8.9	5 54	21.1	12.4	3 05	17.6
9.0	5 51	21.0	12.5	2 58	17.5
9.1	5 48	20.9	12.6	2 51	17.4
9.2	5 45	20.8	12.7	2 45	17.3
9.3	5 42	20.7	12.8	2 48	17.2
9.4	5 39	20.6	12.9	2 31	17.1
9.5	+5 35-	20.5	13.0	+2 24-	17.0
9.6	5 31	20.4	13.1	2 18	16.9
9.7	5 28	20.3	13.2	2 11	16.8
9.8	5 24	20.2	13.3	2 04	16.7
9.9	5 20	20.1	13.4	1 57	16.6
10.0	5 16	20.0	13.5	1 50	16.5
10.1	5 11	19.9	13.6	1 42	16.4
10.2	5 07	19.8	13.7	1 35	16.3
10.3	5 02	19.7	13.8	1 28	16.2
10.4	4 58	19.6	13.9	1 21	16.1
10.5	+4 53-	19.5	14.0	+1 14-	16.0
10.6	4 48	19.4	14.1	1 06	15.9
10.7	4 44	19.3	14.2	0 59	15.8
10.8	4 39	19.2	14.3	0 52	15.7
10.9	4 33	19.1	14.4	0 44	15.6
11.0	4 28	19.0	14.5	0 37	15.5
11.1	4 23	18.9	14.6	0 29	15.4
11.2	4 17	18.8	14.7	0 22	15.3
11.3	4 12	18.7	14.8	0 15	15.2
11.4	4 06	18.6	14.9	0 07	15.1
11.5	+4 00-	18.5	15.0	+0 00-	15.0

# ADVANCE EPHEMERIS

## TRUE MOON

### Corrections to Mean Moon

Table II

Arg. : Tithi

Tithi	Correction	Tithi
0.0	+0 00'	30.0
0.5	08	29.5
1.0	16	29.0
1.5	23	28.5
2.0	+0 29-	28.0
2.5	33	27.5
3.0	36	27.0
3.5	38	26.5
4.0	+0 33-	26.0
4.5	36	25.5
5.0	32	25.0
5.5	27	24.5
6.0	+0 21-	24.0
6.5	+0 14-	23.5
7.0	+0 06-	23.0
7.5	-0 02+	22.5
8.0	-0 10+	22.0
8.5	18	21.5
9.0	25	21.0
9.5	31	20.5
10.0	-0 36+	20.0
10.5	39	19.5
11.0	41	19.0
11.5	41	18.5
12.0	-0 39+	18.0
12.5	35	17.5
13.0	30	17.0
13.5	24	16.5
14.0	-0 17+	16.0
14.5	09	15.5
15.0	-0 00+	15.0

Table III

Arg. : 2 Tithi—Anomaly

Arg.	Correction	Arg.
0.0	+0 00'	30.0
0.5	0 08	29.5
1.0	0 16	29.0
1.5	0 24	28.5
2.0	0 31	28.0
2.5	0 38	27.5
3.0	0 45	27.0
3.5	0 52	26.5
4.0	+0 57-	26.0
4.5	1 02	25.5
5.0	1 06	25.0
5.5	1 10	24.5
6.0	1 13	24.0
6.5	1 15	23.5
7.0	1 16	23.0
7.5	1 16	22.5
8.0	+1 16-	22.0
8.5	1 15	21.5
9.0	1 12	21.0
9.5	1 09	20.5
10.0	1 05	20.0
10.5	1 01	19.5
11.0	0 56	19.0
11.5	0 51	18.5
12.0	+0 44-	18.0
12.5	0 38	17.5
13.0	0 31	17.0
13.5	0 23	16.5
14.0	0 16	16.0
14.5	0 08	15.5
15.0	+0 00-	15.0

N.B. : If  $2 \times \text{Tithi}$  is less than the Moon's anomaly, then 30 is to be added to  $2T$ . If '2 Tithi—Anomaly' is greater than 30, then 30 is to be subtracted from it.

# ADVANCE EPHEMERIS

## TRUE MOON

### Corrections to Mean Moon

Table IV

Correction according to date

Date	Correction
Jan. 0	+ 1
10	- 1
20	3
Feb. 0	5
10	7
20	8
Mar. 0	- 9
10	10
20	11
Apr. 0	11
10	11
20	11
May 0	- 10
10	9
20	8
June 0	6
10	5
20	3
July 0	- 1
10	+ 1
20	3
Aug. 0	5
10	6
20	8
Sept. 0	+ 9
10	10
20	11
Oct. 0	11
10	11
20	11
Nov. 0	+ 10
10	9
20	8
Dec. 0	6
10	5
20	3
31	+ 1

Table V

Corr. according to 'Moon-Rahu

Moon - Rahu	Correction
0 0	- 0
0 10	2
0 20	4
1 0	6
1 10	7
1 20	7
2 0	- 6
2 10	4
2 20	- 2
3 0	0
3 10	+ 2
3 20	4
4 0	+ 6
4 10	7
4 20	7
5 0	6
5 10	4
5 20	+ 2
6 0	+ 0
6 10	- 2
6 20	4
7 0	6
7 10	7
7 20	7
8 0	- 6
8 10	4
8 20	- 2
9 0	0
9 10	+ 2
9 20	4
10 0	+ 6
10 10	7
10 20	7
11 0	6
11 10	4
11 20	2
12 0	+ 0

N.B.: This correction may be ignored when greater accuracy is not needed.



# ADVANCE EPHEMERIS

## Example

(The results are compared with those given in Lahiri's Indian Ephemeris abbreviated as I.E.)

(A) Find the longitudes of the Sun, Moon and Rahu on the 28th April, 1971 at 5-30 A.M., I.S.T.

	True Sun	Mean Moon	Moon's Anomaly	Tithi	Rahu
(Pages 12-13) 1971 Apr. 0	<sup>s</sup> 11 16 11	<sup>s</sup> 1 6 35	5-57	4-360	<sup>s</sup> 9 27.7
(P. 54. <i>et seq.</i> ) Days 28	27 25	0 8 56	0-49	28-445	-1-5
	<u>12 13 36</u>	<u>1 15 31</u>	<u>6-06</u>	<u>32-805</u>	<u>9 26.2</u>
	-12			-30 (I.E. 9 26.3)	
	0 13 36			2-805	
(I.E. 0 13 37)					
	$2T = 2 \times 2-805 = 5-610 + 30$			Mean Moon	= 1 15.5
	Anomaly 6-06			Rahu	= 9 26.2
	$2T - A = 29-550$			Moon - Rahu	= 3 19.3
	= 29-55				= 3s 19"

Corrections to Mean Moon (P. 57 *et seq.*)—

Tab. I (Anomaly)	...	+6° 07'
Tab. II (Tithi)	...	+0 35
Tab. III (2 $T - A$ )	...	-0 07
Tab. IV (Apr. 28)	...	-0 10
Tab. V (Moon-Rahu)	...	+0 04
Total Correction	...	+6 29
Mean Moon	...	1 15 31
True Moon	...	1 22 0 (I.E. 1s 21° 54')

(B) Find the Tithi with the ending moment on the above date (28-4-71)

As the Moon is 1s 22° 0' and the Sun 0s 13° 36' at 5-30 a.m. on the above date, it is clear that the tithi is Chaturthi, the ending moment of which is nearly  $2 \times (9^{\circ} 36')$  or 19h 12m after 5-30 a.m. *i.e.* h. 24-42 I.S.T. The method of calculation in this way would be exhibited later. But here the calculation is shown according to the method given on pages 62 and 63.

On 28-4-1971 the value of the argument Tithi ... = 2-805

Total correction to mean moon is +6° 29'

for which the result from Table VI = +540

Table VII (April 28) = -145

$\therefore$  True Tithi (Apr. 28) = 3-200 (elapsed)

The current Tithi at the epoch (here 5-30 a.m.) is therefore 4 *i.e.* Chaturthi and the balance decimal of Tithi is  $4 - 3-200 = 0-800$ .

Daily motion of Tithi from Tab. VIII : Anomaly (6-06)

12° 22'

Tithi (2-81)

+ 3

$2T - A$  (29-55)

+15

$\therefore$  Daily motion = 12 40 = 12-7

The balance decimal 0-800 converted into hours using the daily motion 12-7 from the table on p. 63 gives : for 0-80 = 18-1h

0-00 = 0-00

18-10 = 18h 6m

Initial epoch 5 30

Ending moment of Chaturthi ... 23 36 I.S.T.

(I.E. 23 46)

# ADVANCE EPHEMERIS

## ENDING MOMENT OF TITHI

Take the total of the corrections to Mean Moon for the moment as obtained from Tables I to V, and according to this correction take the result from Table VI and apply it to the argument 'Tithi'. Similarly the result from Table VII is also to be applied to the 'Tithi'.

Then from Table VIII take the daily motion of True Tithi according to the first three arguments for the moment.

Table VI

Total Corr.	Result
1	0.083
2	.187
3	.250
4	.333
5	.417
6	.500
7	.583
8	.667
2	0.003
4	.006
6	.008
8	.011
10	.014
12	.017
14	.020
16	.022
18	.025
20	.028
22	.031
24	.033
26	.036
28	.039
30	.042
32	.045
34	.047
36	.050
38	.053
40	.056
42	.058
44	.061
46	.064
48	.067
50	.069
52	.072
54	.075
56	.078
58	.080
60	.083

The result is of the same sign as that of correction.

Table VII

Date	Result
Jan. 0	+ 0.008
10	- 0.019
20	.045
30	.071
Feb. 9	.095
19	.116
Mar. 1	- .133
11	.146
21	.155
31	.159
Apr. 10	.158
20	.153
30	.143
May 10	- .129
20	.112
30	.091
June 9	.068
19	.044
29	- 0.017
July 9	+ 0.030
19	.037
29	.063
Aug. 8	.087
18	.108
28	.126
Sept. 7	+ .140
17	.151
27	.158
Oct. 7	.160
17	.156
27	.148
Nov. 6	+ .137
16	.121
26	.100
Dec. 6	.077
16	.052
26	+ 0.024
36	- 0.004

Table VIII

Daily motion

Arg.	For Anomaly	For Tithi	For 2T-A
0	13 43	+16	+ 15
1	13 38	13	14
2	13 28	7	13
3	13 14	+ 2	11
4	12 59	- 6	8
5	12 41	11	6
6	12 23	15	+ 3
7	12 05	16	0
8	11 48	-15	- 4
9	11 33	11	7
10	11 18	- 5	9
11	11 08	+ 2	11
12	10 59	9	12
13	10 55	13	14
14	10 51	17	15
15	10 51	17	15
16	10 55	+13	- 14
17	11 00	9	12
18	11 09	+ 2	11
19	11 20	- 5	9
20	11 34	11	7
21	11 49	15	- 4
22	12 07	16	0
23	12 24	15	+ 3
24	12 43	-11	+ 6
25	13 01	- 6	8
26	13 16	+ 2	11
27	13 30	7	13
28	13 39	13	14
29	13 43	16	15
30	13 43	+16	+ 15

Three results are to be taken according to the values of Moon's Anomaly, Tithi and 2T-A for the day. The sum of these three results is the daily motion of true tithi for that day. Here true 'tithi' means 'True Moon-True Sun'.

# ADVANCE EPHEMERIS

## Ending Moment of Tithi--contd.

The argument Tithi for the day as corrected by the results from Tables VI and VII may be called True Tithi for the moment. The whole number of this is the number of elapsed tithi and the next higher number is the tithi current at that time. Subtract the true Tithi from this next higher number and the decimal that remains denotes the ending moment of the tithi counted from the initial epoch ( normally 5-30 A.M. I.S.T. ).

The balance decimal portion is to be converted into hours and minutes from the following table utilising the daily motion of true tithi obtained from Table VIII taken in degrees with decimal.

## Balance Decimal converted into Hours with decimal

Balance Decimal	DAILY MOTION								
	10°5	11°0	11°5	12°0	12°5	13°0	13°5	14°0	14°5
	<i>h</i>	<i>h</i>	<i>h</i>	<i>h</i>	<i>h</i>	<i>h</i>	<i>h</i>	<i>h</i>	<i>h</i>
·00	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
·05	1·4	1·3	1·3	1·2	1·2	1·1	1·1	1·0	1·0
·10	2·7	2·6	2·5	2·4	2·3	2·2	2·1	2·1	2·0
·15	4·1	3·9	3·8	3·6	3·5	3·3	3·2	3·1	3·0
·20	5·5	5·2	5·0	4·8	4·6	4·4	4·3	4·1	4·0
·25	6·9	6·5	6·3	6·0	5·8	5·5	5·3	5·1	5·0
·30	8·2	7·9	7·5	7·2	6·9	6·6	6·4	6·2	6·0
·35	9·6	9·2	8·8	8·4	8·1	7·8	7·5	7·2	7·0
·40	11·0	10·5	10·0	9·6	9·2	8·9	8·5	8·2	7·9
·45	12·3	11·8	11·3	10·8	10·4	10·0	9·6	9·3	8·9
·50	13·7	13·1	12·5	12·0	11·5	11·1	10·7	10·3	9·9
·55	15·1	14·4	13·8	13·2	12·7	12·2	11·7	11·3	10·9
·60	16·5	15·7	15·0	14·4	13·8	13·3	12·8	12·3	11·9
·65	17·8	17·0	16·1	15·6	15·0	14·4	13·9	13·4	12·9
·70	19·2	18·3	17·5	16·8	16·1	15·5	14·9	14·4	13·9
·75	20·6	19·6	18·8	18·0	17·3	16·6	16·0	15·4	14·9
·80	21·9	20·9	20·0	19·2	18·4	17·7	17·1	16·5	15·9
·85	23·3	22·3	21·3	20·4	19·6	18·8	18·1	17·5	16·9
·90	24·7	23·6	22·5	21·6	20·7	19·9	19·2	18·5	17·9
·95	26·1	24·9	23·8	22·8	21·9	21·0	20·3	19·5	18·9
1·00	27·4	26·2	25·0	24·0	23·0	22·2	21·3	20·6	19·9
Var. for									
·01	0·3	0·3	0·3	0·2	0·2	0·2	0·2	0·2	0·2
·02	0·6	0·5	0·5	0·5	0·5	0·4	0·4	0·4	0·4
·03	0·8	0·8	0·8	0·7	0·7	0·7	0·6	0·6	0·6
·04	1·1	1·0	1·0	1·0	0·9	0·9	0·9	0·8	0·8
·05	1·4	1·3	1·3	1·2	1·2	1·1	1·1	1·0	1·0

**Rule for Interpolation :—**While interpolating between two columns the difference of horizontal figures in the table is to be multiplied by 2 and by the decimal of the daily motion in excess of the motion as given at the top, and the result is to be subtracted from the figure of the original column.

**Note :—**The figure in the decimal portion of the hour multiplied by 6 gives the minutes of time after the hour.

**N.B.—**The balance decimal multiplied by 12 gives the balance degree of tithi.

# ADVANCE EPHEMERIS

## MERCURY

( Detailed Method )

Add the day of the month to the "Days from conjunction" given for the zero-date. If the sum exceeds the period, then the period is to be subtracted. This may be called  $A_0$ .

( The period is 115.9 days, so that 1 day =  $3^{\circ}107'$  )

Then take  $a$ ,  $A_1$  and  $B_1$  from the following table according to date.

Date	$a$	$A_1$	$B_1$	Date	$a$	$A_1$	$B_1$
	d	d			d	d	
Jan. 0	85.0	+ 0.0	0	June 29	6.3	- 0.1	15
10	88.2	- 0.1	0	July 9	9.4	+ 0.0	15
20	71.4	0.2	0	19	12.6	0.2	14
30	74.5	0.3	1	29	15.8	0.3	14
Feb. 9	77.7	0.4	2	Aug. 8	18.9	0.4	13
19	80.9	0.5	2	18	22.1	0.4	13
Mar. 1	84.1	0.5	3	28	25.3	0.5	12
11	87.2	0.6	4	Sept. 7	28.5	0.6	11
21	90.4	0.6	5	17	31.6	0.6	10
31	93.6	0.7	7	27	34.8	0.7	9
Apr. 10	96.8	0.7	8	Oct 7	38.0	0.7	7
20	99.9	0.6	9	17	41.2	0.6	6
30	103.1	0.6	10	27	44.3	0.6	5
May 10	106.3	0.5	11	Nov. 6	47.5	0.5	4
20	109.4	0.4	12	16	50.7	0.5	3
30	112.6	0.4	13	26	53.8	0.4	2
June 9	115.8	0.3	14	Dec. 6	57.0	0.3	1
19	3.1	0.2	14	16	60.2	0.2	0
29	6.3	- 0.1	15	26	63.4	+ 0.1	0
July 9	9.4	+ 0.0	15	36	66.5	- 0.0	0

N.B.—Daily motion of  $a$  is  $0.317$ .

Then find  $A_0 + a$  and if necessary subtract the period ( $A_0 + a$  is the mean anomaly of Mercury in units of  $3^{\circ}107'$ ).

Find from the following table the values of  $A_2$  and  $B_2$  according to the value of  $A_0 + a$ .

$A_0 + a$	$A_2$	$B_2$	$A_0 + a$	$A_0 + a$	$A_2$	$B_2$	$A_0 + a$
	d				d		
0	+ 0.0-	505	116	28	+ 7.5-	392	88
2	1.1	504	114	30	7.3	384	86
4	2.2	501	112	32	7.1	376	84
6	3.2	496	110	34	6.8	368	82
8	4.1	489	108	36	6.4	361	80
10	4.9	482	106	38	5.9	354	78
12	5.7	473	104	40	5.4	348	76
14	6.3	463	102	42	4.9	343	74
16	6.8	453	100	44	4.3	339	72
18	7.2	442	98	46	3.8	335	70
20	7.4	432	96	48	3.2	331	68
22	7.5	421	94	50	2.5	329	66
24	7.6	411	92	52	1.9	327	64
26	7.6	401	90	54	1.3	325	62
28	7.5	392	88	56	0.6	324	60
30	+ 7.3-	384	86	58	+ 0.0-	324	58

# ADVANCE EPHEMERIS

## Mercury ( Detailed Method )—contd.

Now find  $A = A_0 + A_1 + A_2$  and  $B = B_1 + B_2$

With these values of  $A$  and  $B$  find from the following table by double interpolation the elongation of Mercury from the Sun and apply it to the True Sun for the day to get the true longitude of Mercury.

## Elongation from the Sun

A	B						A
	320	360	400	440	480	520	
d							d
0	+ 0.0	0.0	0.0	0.0	0.0	0.0	116
2	2.0	1.8	1.7	1.6	1.6	1.5	114
4	4.0	3.7	3.5	3.3	3.1	2.9	112
6	6.0	5.6	5.2	4.9	4.6	4.3	110
8	8.0	7.5	7.0	6.5	6.1	5.7	108
10	10.0	9.3	8.7	8.1	7.5	7.0	106
12	+11.9	11.1	10.4	9.7	9.0	8.4	104
14	13.7	12.8	12.0	11.2	10.4	9.6	102
16	15.5	14.5	13.5	12.6	11.7	10.9	100
18	17.2	16.1	15.0	14.0	13.0	12.1	98
20	19.0	17.7	16.5	15.3	14.2	13.2	96
22	20.7	19.2	17.8	16.5	15.3	14.2	94
24	+22.3	20.7	19.1	17.6	16.3	15.1	92
26	23.7	22.0	20.3	18.6	17.2	15.9	90
28	25.0	23.1	21.2	19.5	18.0	16.6	88
30	26.1	24.0	22.0	20.2	18.6	17.1	86
32	27.1	24.8	22.7	20.8	19.0	17.4	84
34	27.9	25.4	23.2	21.2	19.3	17.6	82
36	+28.4	25.8	23.5	21.3	19.3	17.5	80
38	28.6	25.8	23.4	21.2	19.1	17.2	78
40	28.4	25.5	23.0	20.7	18.6	16.7	76
42	27.8	24.8	22.2	19.9	17.8	15.9	74
44	26.7	23.7	21.0	18.7	16.6	14.8	72
46	25.0	22.0	19.4	17.1	15.1	13.5	70
47	+23.9	20.9	18.4	16.2	14.3	12.7	69
48	22.7	19.7	17.3	15.2	13.4	11.8	68
49	21.3	18.4	16.0	14.0	12.3	10.9	67
50	19.6	16.8	14.5	12.7	11.2	9.9	66
51	17.6	15.1	12.9	11.3	10.0	8.8	65
52	15.5	13.2	11.3	9.9	8.7	7.6	64
53	+13.2	11.2	9.6	8.3	7.3	6.4	63
54	10.7	9.1	7.8	6.7	5.9	5.2	62
55	8.1	6.9	5.9	5.1	4.5	3.9	61
56	5.4	4.6	4.0	3.4	3.0	2.6	60
57	2.7	2.3	2.0	1.7	1.5	1.3	59
58	+ 0.0	0.0	0.0	0.0	0.0	0.0	58

N.B.—Period of  $A$  is 115.9 days.

Note:—When the argument  $A$  is between 0 and 58 the elongation is positive, i.e. the correction is to be added to the Sun, when between 58 and 116 it is to be subtracted.

# Elongation of Mercury (Short Method)

Arg. :  $A_0$  = Days from conjunction up to the given date.

A.	Dec. 10 (44)	Jan. 23 (44)	Mar. 8 (46)	Apr. 23 (46)	June 8 (47)	July 25 (47)	Sept. 10 (46)	Oct. 26 (45)	Dec. 10 (45)
0	+ 0.2	- 4.4	- 7.1	- 5.7	- 0.2	+ 5.2	+ 7.0	+ 4.6	+ 0.2
1	+ 0.8	- 3.6	- 6.3	- 4.7	+ 0.9	+ 6.2	+ 7.8	+ 5.4	+ 0.8
2	+ 1.3	- 2.9	- 5.5	- 3.7	+ 2.0	+ 7.1	+ 8.7	+ 6.1	+ 1.5
3	+ 2.2	- 2.2	- 4.7	- 2.7	+ 3.1	+ 8.1	+ 9.5	+ 6.8	+ 2.2
4	+ 2.9	- 1.5	- 3.8	- 1.6	+ 4.2	+ 9.0	+ 10.3	+ 7.5	+ 2.9
5	+ 3.6	- 0.8	- 2.9	- 0.6	+ 5.3	+ 10.0	+ 11.1	+ 8.2	+ 3.6
6	+ 4.3	- 0.1	- 2.0	+ 0.5	+ 6.4	+ 10.9	+ 11.9	+ 8.9	+ 4.3
7	+ 5.0	+ 0.6	- 1.0	+ 1.6	+ 7.5	+ 11.8	+ 12.7	+ 9.6	+ 5.0
8	+ 5.6	+ 1.3	- 0.1	+ 2.7	+ 8.5	+ 12.7	+ 13.4	+ 10.3	+ 5.6
9	+ 6.3	+ 2.0	+ 0.9	+ 3.7	+ 9.6	+ 13.6	+ 14.1	+ 11.0	+ 6.3
10	+ 6.9	+ 2.7	+ 1.8	+ 4.8	+ 10.6	+ 14.4	+ 14.8	+ 11.6	+ 6.9
11	7.6	3.4	2.8	5.8	11.5	15.2	15.5	12.2	7.6
12	8.2	4.2	3.7	6.9	12.5	16.0	16.2	12.8	8.2
13	8.9	5.0	4.6	7.9	13.4	16.8	16.8	13.4	8.9
14	9.5	5.8	5.5	9.0	14.3	17.6	17.5	14.0	9.5
15	10.1	6.5	6.4	10.0	15.2	18.3	18.1	14.6	10.1
16	10.7	7.3	7.2	11.0	16.0	19.0	18.7	15.2	10.7
17	11.3	8.0	8.1	12.0	16.8	19.7	19.3	15.8	11.3
18	11.9	8.8	8.9	12.9	17.6	20.3	19.9	16.4	11.9
19	12.5	9.5	9.8	13.8	18.3	20.9	20.5	17.0	12.5
20	13.1	10.3	10.6	14.6	19.0	21.5	21.0	17.6	13.1
21	13.7	11.0	11.5	15.4	19.6	22.1	21.6	18.1	13.7
22	14.3	11.7	12.3	16.2	20.2	22.6	22.1	18.6	14.3
23	14.9	12.4	13.1	16.9	20.7	23.2	22.7	19.1	14.9
24	15.5	13.1	13.9	17.5	21.3	23.7	23.2	19.6	15.5
25	16.1	13.8	14.6	18.1	21.8	24.2	23.7	20.1	16.1
26	16.6	14.4	15.3	18.6	22.2	24.6	24.2	20.5	16.6
27	17.2	15.0	15.9	19.0	22.6	25.0	24.6	21.0	17.2
28	17.7	15.5	16.5	19.4	23.0	25.4	25.0	21.4	17.7
29	18.2	16.0	17.0	19.7	23.3	25.8	25.4	21.8	18.2
30	18.7	16.5	17.4	19.8	23.6	26.1	25.7	22.2	18.7
31	19.1	17.0	17.7	19.9	23.8	26.4	26.0	22.6	19.1
32	19.5	17.4	18.0	19.9	24.0	26.7	26.2	22.9	19.5
33	19.9	17.8	18.2	20.0	24.0	26.9	26.4	23.2	19.9
34	20.2	18.1	18.2	20.0	24.0	27.0	26.6	23.4	20.2
35	20.5	18.4	18.2	19.9	23.9	27.0	26.7	23.6	20.5
36	20.8	18.6	18.0	19.7	23.7	27.0	26.8	23.8	20.8
37	21.0	18.7	17.7	19.4	23.4	27.0	26.9	24.0	21.0
38	21.1	18.6	17.3	18.9	23.1	26.9	26.9	24.1	21.1
39	21.2	18.3	16.7	18.3	22.7	26.8	27.0	24.2	21.2
40	21.1	18.0	16.0	17.6	22.3	26.6	27.0	24.2	21.1
41	20.9	17.5	15.2	16.7	21.8	26.4	27.0	24.1	20.9
42	20.7	17.0	14.2	15.8	21.2	26.1	26.8	24.0	20.7
43	20.4	16.3	13.1	14.7	20.5	25.7	26.6	23.8	20.4
44	20.0	15.5	11.9	13.5	19.7	25.3	26.4	23.6	20.0
45	19.4	14.6	10.6	12.1	18.8	24.7	26.1	23.2	19.4
46	18.7	13.5	9.1	10.6	17.9	24.1	25.6	22.8	18.7
47	17.8	12.0	7.5	9.0	16.8	23.3	25.0	22.3	17.8
48	16.7	10.4	5.8	7.4	15.7	22.5	24.3	21.6	16.7
49	15.6	8.7	4.0	5.8	14.4	21.6	23.6	20.9	15.6
50	+ 14.4	+ 6.8	+ 2.1	+ 4.2	+ 13.0	+ 20.6	+ 22.8	+ 20.0	+ 14.4
51	+ 13.1	+ 4.8	+ 0.2	+ 2.6	+ 11.6	+ 19.5	+ 21.9	+ 19.0	+ 13.1
52	+ 11.6	+ 2.8	- 1.8	+ 1.0	+ 10.2	+ 18.4	+ 20.9	+ 17.9	+ 11.6
53	+ 9.9	+ 0.8	- 3.7	- 0.7	+ 8.8	+ 17.2	+ 19.8	+ 16.7	+ 9.9
54	+ 8.0	- 1.3	- 5.7	- 2.4	+ 7.3	+ 15.9	+ 18.7	+ 15.3	+ 8.0
55	+ 5.9	- 3.4	- 7.6	- 4.1	+ 5.8	+ 14.5	+ 17.4	+ 13.8	+ 5.9
56	+ 3.6	- 5.5	- 9.5	- 5.9	+ 4.2	+ 13.0	+ 16.1	+ 12.2	+ 3.6
57	+ 1.3	- 7.7	- 11.3	- 7.7	+ 2.6	+ 11.4	+ 14.6	+ 10.5	+ 1.3
58	- 0.9	- 9.8	- 13.0	- 9.5	+ 1.0	+ 9.8	+ 13.0	+ 8.6	- 0.9

# Elongation of Mercury ( Short Method )-contd.

$A_0$  = Days from conjunction.

Period of  $A_0$  = 115.9 days.

A.	Dec. 10	Jan. 23	Mar. 8	Apr. 23	June 8	July 25	Sept. 10	Oct. 26	Dec. 10	A.
	(44)	(44)	(46)	(46)	(47)	(47)	(46)	(45)		
58	- 0.9	- 9.8	-13.0	- 9.5	+ 1.0	+ 9.8	+13.0	+ 8.6	- 0.9	58
59	- 2.9	-11.9	-14.6	-11.3	- 0.6	+ 8.0	+11.3	+ 6.6	- 2.9	59
60	- 4.9	-13.9	-16.1	-12.9	- 2.3	+ 6.2	+ 9.5	+ 4.6	- 4.9	60
61	- 6.8	-15.5	-17.5	-14.5	- 4.0	+ 4.5	+ 7.7	+ 2.6	- 6.8	61
62	- 8.7	-16.9	-18.9	-16.0	- 5.7	+ 2.7	+ 5.8	+ 0.5	- 8.7	62
63	-10.5	-18.1	-20.1	-17.4	- 7.4	+ 1.0	+ 3.9	- 1.5	-10.5	63
64	-12.2	-19.1	-21.3	-18.7	- 9.0	- 0.7	+ 2.0	- 3.5	-12.2	64
65	-13.6	-20.0	-22.3	-19.8	-10.6	- 2.4	+ 0.2	- 5.4	-13.6	65
66	-14.9	-20.9	-23.2	-20.9	-12.1	- 4.0	- 1.6	- 7.3	-14.9	66
67	-16.1	-21.7	-24.0	-21.9	-13.6	- 5.6	- 3.3	- 9.1	-16.1	67
68	17.1	22.4	24.7	22.8	15.0	7.2	5.1	10.8	17.1	68
69	18.1	23.1	25.3	23.6	16.4	8.8	6.8	12.3	18.1	69
70	18.9	23.6	25.8	24.4	17.6	10.4	8.4	13.7	18.9	70
71	19.5	24.0	26.2	25.1	18.6	11.9	10.0	14.8	19.5	71
72	20.0	24.2	26.5	25.7	19.6	13.3	11.4	15.7	20.0	72
73	20.3	24.3	26.7	26.2	20.4	14.4	12.7	16.5	20.3	73
74	20.6	24.4	26.8	26.6	21.1	15.5	13.9	17.1	20.6	74
75	20.8	24.4	26.9	26.9	21.6	16.4	14.9	17.6	20.8	75
76	20.9	24.4	26.9	27.1	22.1	17.1	15.7	18.0	20.9	76
77	20.8	24.4	27.0	27.2	22.4	17.8	16.3	18.2	20.8	77
78	20.7	24.3	27.0	27.3	22.7	18.4	16.8	18.3	20.7	78
79	20.5	24.2	27.0	27.3	23.0	18.8	17.2	18.3	20.5	79
80	20.3	24.0	27.0	27.3	23.2	19.2	17.5	18.3	20.3	80
81	20.0	23.8	26.9	27.3	23.4	19.5	17.7	18.2	20.0	81
82	19.7	23.6	26.8	27.2	23.6	19.8	17.9	17.9	19.7	82
83	19.3	23.4	26.7	27.1	23.8	19.9	18.1	17.6	19.3	83
84	18.9	23.1	26.5	26.9	23.9	20.0	18.2	17.2	18.9	84
85	18.5	22.8	26.3	26.7	23.8	19.9	18.0	16.8	18.5	85
86	18.0	22.4	26.0	26.4	23.6	19.8	17.7	16.3	18.0	86
87	17.6	22.0	25.6	26.1	23.4	19.6	17.3	15.8	17.6	87
88	17.1	21.5	25.2	25.8	23.2	19.3	16.8	15.2	17.1	88
89	16.6	21.1	24.7	25.4	22.9	18.9	16.2	14.6	16.6	89
90	16.1	20.6	24.2	25.0	22.5	18.5	15.5	14.0	16.1	90
91	15.6	20.1	23.7	24.6	22.1	18.0	14.8	13.4	15.6	91
92	15.1	19.6	23.1	24.1	21.6	17.5	14.0	12.7	15.1	92
93	14.6	19.0	22.6	23.6	21.1	16.9	13.2	12.0	14.6	93
94	14.0	18.5	22.0	23.1	20.6	16.3	12.4	11.3	14.0	94
95	13.4	17.9	21.5	22.6	20.0	15.6	11.6	10.6	13.4	95
96	12.8	17.4	20.9	22.0	19.4	14.8	10.8	9.9	12.9	96
97	12.3	16.8	20.4	21.4	18.7	14.0	9.9	9.2	12.3	97
98	11.7	16.3	19.8	20.7	18.0	13.1	9.0	8.4	11.7	98
99	11.1	15.7	19.2	20.1	17.2	12.2	8.1	7.7	11.1	99
100	10.4	15.1	18.6	19.4	16.4	11.2	7.2	6.9	10.4	100
101	9.8	14.5	18.0	18.7	15.5	10.2	6.3	6.2	9.8	101
102	9.1	13.9	17.4	18.0	14.6	9.2	5.4	5.4	9.1	102
103	8.5	13.3	16.8	17.2	13.7	8.2	4.5	4.6	8.5	103
104	7.8	12.7	16.1	16.4	12.7	7.2	3.6	3.9	7.8	104
105	7.2	12.0	15.4	15.6	11.7	6.2	2.7	3.2	7.2	105
106	6.5	11.4	14.7	14.8	10.7	5.1	1.8	2.4	6.5	106
107	- 5.8	-10.7	-14.0	-14.0	- 9.7	- 4.1	- 0.9	- 1.7	- 5.8	107
108	- 5.1	-10.0	-13.3	-13.1	- 8.7	- 3.0	- 0.0	- 0.9	- 5.1	108
109	- 4.5	- 9.3	-12.6	-12.2	- 7.7	- 2.0	+ 0.9	- 0.2	- 4.5	109
110	- 3.8	- 8.6	-11.8	-11.3	- 6.6	- 0.9	+ 1.8	+ 0.5	- 3.8	110
111	- 3.1	- 7.9	-11.0	-10.4	- 5.6	+ 0.1	+ 2.7	+ 1.2	- 3.1	111
112	- 2.4	- 7.2	-10.2	- 9.5	- 4.5	+ 1.2	+ 3.6	+ 1.9	- 2.4	112
113	- 1.8	- 6.5	- 9.4	- 8.6	- 3.4	+ 2.3	+ 4.5	+ 2.6	- 1.8	113
114	- 1.1	- 5.8	- 8.6	- 7.6	- 2.3	+ 3.3	+ 5.4	+ 3.3	- 1.1	114
115	- 0.5	- 5.0	- 7.8	- 6.6	- 1.2	+ 4.3	+ 6.3	+ 4.0	- 0.5	115
116	+ 0.2	- 4.3	- 7.0	- 5.6	- 0.1	+ 5.3	+ 7.1	+ 4.7	+ 0.2	116

# ADVANCE EPHEMERIS

## VENUS

The longitude of Venus is to be obtained from the argument 'Days from conjunction' and the longitude of the Sun utilising the table below.

Let  $A_0$  = Days from conjunction for the zero-date *plus* the day the month as in the case of Mercury. When the value of  $A_0$  exceeds the period of 583.9 days, the period is to be subtracted from it. With this value of  $A_0$  find the elongation of Venus from the following table by double interpolation and apply it to the True Sun for the day to get the true longitude of Venus.

Elongation of Venus from the Sun

$A_0$	Jan. 1	Apr. 1	July 1	Oct. 1	Jan. 1	$A_0$
d						d
0	+ 0.2	- 1.2	- 0.2	+ 1.1	+ 0.2	0
5	+ 1.5	+ 0.2	+ 1.1	+ 2.4	+ 1.5	5
10	+ 2.8	+ 1.5	+ 2.4	+ 3.7	+ 2.8	10
15	4.1	2.8	3.7	5.0	4.1	15
20	5.4	4.1	5.0	6.3	5.4	20
30	8.0	6.6	7.5	8.8	8.0	30
40	10.6	9.2	10.1	11.4	10.6	40
50	13.2	11.7	12.6	14.0	13.2	50
60	15.7	14.3	15.2	16.5	15.7	60
70	18.2	16.8	17.7	19.0	18.2	70
80	20.7	19.3	20.2	21.5	20.7	80
90	23.2	21.8	22.7	24.0	23.2	90
100	25.6	24.3	25.1	26.3	25.6	100
110	28.0	26.7	27.5	28.7	28.0	110
120	30.3	29.1	29.8	31.0	30.3	120
130	+32.6	+31.4	+32.1	+33.3	+32.6	130
140	34.8	33.7	34.3	35.5	34.8	140
150	37.0	35.8	36.4	37.5	37.0	150
160	39.1	37.9	38.4	39.5	39.1	160
170	41.0	39.8	40.1	41.3	41.0	170
180	42.8	41.6	41.8	43.0	42.8	180
190	44.4	43.2	43.2	44.5	44.4	190
200	45.8	44.6	44.4	45.7	45.8	200
210	46.7	45.5	45.0	46.3	46.7	210
220	47.2	46.1	45.3	46.5	47.2	220
230	47.2	46.1	44.8	46.0	47.2	230
240	+46.0	+44.9	+43.3	+44.3	+46.0	240
245	44.8	43.8	42.0	42.9	44.8	245
250	43.3	42.5	40.5	41.3	43.3	250
255	41.4	40.8	38.5	39.2	41.4	255
260	39.0	38.5	36.0	36.4	39.0	260
265	35.8	35.4	32.7	32.6	35.8	265
270	31.5	31.4	28.2	27.6	31.5	270
272	29.5	29.6	26.1	25.3	29.5	272
274	27.3	27.6	23.9	23.0	27.3	274
276	25.0	25.5	21.5	20.5	25.0	276
278	22.5	23.3	19.0	17.9	22.5	278
280	19.8	20.9	16.5	15.3	19.8	280
282	16.9	18.3	13.9	12.4	16.9	282
284	+13.9	+15.5	+11.1	+ 9.3	+13.9	284



ADVANCE EPHEMERIS

VENUS

Elongation of Venus—*contd.*

$A_0$	Jan. 1	Apr. 1	July 1	Oct. 1	Jan. 1	$A_0$
d	°	°	°	°	°	d
284	+13.9	+15.5	+11.1	+ 9.3	+13.9	284
286	+10.7	+12.6	+ 8.2	+ 6.2	+10.7	286
288	+ 7.4	+ 9.6	+ 5.3	+ 3.0	+ 7.4	288
290	+ 4.0	+ 6.4	+ 2.3	- 0.3	+ 4.0	290
292	+ 0.6	+ 3.0	- 0.8	- 3.5	+ 0.6	292
294	- 2.8	- 0.4	- 3.9	- 6.6	- 2.8	294
296	- 6.2	- 3.8	- 6.9	- 9.7	- 6.2	296
298	9.5	7.1	9.8	12.7	9.5	298
300	12.7	10.3	12.6	15.7	12.7	300
302	15.7	13.4	15.3	18.4	15.7	302
304	18.6	16.4	17.9	20.8	18.6	304
306	21.4	19.1	20.4	23.1	21.4	306
308	24.0	21.7	22.8	25.4	24.0	308
310	26.5	24.1	25.0	27.5	26.5	310
312	28.7	26.2	27.1	29.4	28.7	312
315	-31.6	-29.0	-30.0	-32.1	-31.6	315
320	35.6	33.0	34.0	35.9	35.6	320
325	38.8	36.4	37.2	39.0	38.8	325
330	41.4	39.2	39.7	41.4	41.4	330
335	43.3	41.4	41.6	43.0	43.3	335
340	44.7	43.2	43.1	44.2	44.7	340
345	45.7	44.6	44.2	45.1	45.7	345
350	46.4	45.6	45.0	45.8	46.4	350
360	46.8	46.4	45.6	46.3	46.8	360
370	46.7	46.4	45.6	46.1	46.7	370
380	45.9	45.8	45.0	45.2	45.9	380
390	44.8	44.8	44.0	44.1	44.8	390
400	43.3	43.4	42.6	42.6	43.3	400
410	41.6	41.8	41.0	40.9	41.6	410
420	39.7	40.0	39.3	39.0	39.7	420
430	37.7	38.1	37.3	37.0	37.7	430
440	35.6	36.2	35.3	34.9	35.6	440
450	33.4	34.0	33.1	32.7	33.4	450
460	-31.1	-31.7	-30.9	-30.4	-31.1	460
470	28.7	29.5	28.7	28.0	28.7	470
480	26.2	27.2	26.4	25.5	26.2	480
490	23.8	24.8	24.0	23.0	23.8	490
500	21.3	22.3	21.5	20.5	21.3	500
510	18.8	19.8	19.0	18.0	18.8	510
520	16.3	17.3	16.5	15.5	16.3	520
530	13.8	14.8	14.0	13.0	13.8	530
540	11.2	12.3	11.5	10.4	11.2	540
550	8.6	9.8	8.9	7.7	8.6	550
560	6.0	7.2	6.3	5.1	6.0	560
565	- 4.7	- 6.0	- 5.0	- 3.8	- 4.7	565
570	- 3.4	- 4.7	- 3.7	- 2.5	- 3.4	570
575	- 2.1	- 3.4	- 2.5	- 1.2	- 2.1	575
580	- 0.8	- 2.1	- 1.2	+ 0.1	- 0.8	580
585	+ 0.5	- 0.9	+ 0.1	+ 1.4	+ 0.5	585

Period of  $A_0$  = 583.9 days.

# ADVANCE EPHEMERIS

## Conjunctions of Mercury and Venus with Sun

The conjunctions of Mercury and Venus with the Sun occur when the value of  $A_0$  i.e. Days from conjunction up to the given date of the planet in question attains the following amounts.

Mercury			Venus		
Date	Superior Conjunction d	Inferior Conjunction d	Date	Superior Conjunction d	Inferior Conjunction d
Dec. 10	115.7	57.6	Jan. 1	583	292
Jan. 23	6.1	53.4	Feb. 16	2	293
Mar. 8	8.1	51.1	Apr. 1	4	294
Apr. 23	5.5	52.6	May 16	2	293
June 8	0.2	58.6	July 1	1	292
July 25	110.9	63.6	Aug. 16	582	291
Sept. 10	108.0	68.1	Oct. 1	580	290
Oct. 26	109.3	62.2	Nov. 16	582	291
Dec. 10	115.7	57.6	Jan. 1	583	292
Mean conj.	0.0 or 115.9	57.9 or 58.0	Mean conj.	0 or 584	292

## Examples of Mercury and Venus

*Example 1.* Longitude of Mercury by the detailed method.

Date : Feb. 1. 1971 (at 5-30 A.M. I.S.T)

(P.12) Days from conj. : 1971, Feb. 0=89.1

Day of the month = 1

$\therefore A_0 = 90.1$

(P. 64) On Feb. 1 i.e. 2 days after Jan. 30

$a = 75.1, A_1 = -0.3, B_1 = 1$

$\therefore A_0 + a = 165.3$

Less period...115.9

$A_0 + a = 49.3$

(P. 64) Against the above value of 49.3 for  $A_0 + a$  we get

$A_2 = +2.8, B_2 = 330$

$\therefore A = A_0 + A_1 + A_2 = 90.1 - 0.3 + 2.8 = 92.6$

$B = B_1 + B_2 = 1 + 330 = 331$

With these values of  $A$  and  $B$  enter the table on p. 65 to find the elongation of Mercury from the Sun.

$B = 320$	$B = 360$	$A$
20° 7	19° 2 -	94
22.3	20.7 -	92

We get for  $A = 92.6$ . 21.8 20.2

Now for  $B = 331$  (-) 21° 4 = Elongation of Mercury.

True longitude of Sun on 1-2-71 = 9s 18° 1'

Elongation of Mercury = (-) 21 24

$\therefore$  Long. of Mercury = 8 26 37 (I.E. 8 26 40)

# ADVANCE EPHEMERIS

## Examples of Mercury and Venus

*Example 2.* Longitudes of Mercury and Venus by the short method.

Date : Feb. 1, 1971 (5-30 I.S.T.)

	Mercury	Venus
	d	d
(P. 12) Days from conjunction (1971, Feb. 0)	89.1	372.3
Day of the month	$\frac{1}{1}$	$\frac{1}{1}$
A. ...	90.1	373.3

Now against the above values of A. find the elongations of Mercury and Venus for the above date (Feb. 1) from the tables on pages 67 and 69 respectively.

For Mercury the figures are given in the table for Jan. 23 and Mar. 8, i.e. at an interval of 44 days and our date Feb. 1 is 9 days after Jan. 23. Hence the ratio to be applied for horizontal interpolation is  $9 : 44 = 1/5$  nearly.

In the case of Venus, the figures are given for Jan. 1 and Apr. 1, i.e. at an interval of 3 months, and our date is one month later than Jan. 1. Hence the ratio to be applied in this case is  $1 : 3 = 1/3$ .

Mercury			Venus		
A.	Jan. 23	Mar. 8	A.	Jan. 1	Apr. 1
90	-20° 6'	-24° 2'	370	-46° 7'	-46° 4'
91	-20 1	-23 7	380	-45 9	-45 8
For 90.1 ...	20.6	24.2	For 373.3 ...	46.4	46.2
For Feb. 1 ...	20.6 + 1/5 (24.2 - 20.6)		For Feb. 1 ...	46.4 + 1/3 (46.2 - 46.4)	
	= 20° 6' + 0° 7' = (-) 21° 3'			= 46° 4' - 0° 1' = (-) 46° 3'	
True Sun on 1.2.71	= 9s 18° 1'		True Sun on 1.2.71	= 9s 18° 1'	
Elongation	= (-) 21 18		Elongation	= (-) 1 16 18	
Long. of Mercury	= 8° 26 43		Long. of Venus	8 1 43	
	(I.E. 8 26 40)			(I.E. 8 1 31)	

*Example 3.* Find the longitudes of Mercury and Venus for May 5, 1970 (as usual for 5-30 A.M. I.S.T.)

Mercury			Venus		
(P. 10) Days from conj. (1970, May 0)	44.9		96.3		
Day of the month	$\frac{5}{49.9}$		$\frac{5}{101.3}$		
A. ...	49.9		101.3		
(Pp. 66 & 68) Interpolation factor	$\frac{\text{May 5} - \text{Apr. 23}}{46}$		$\frac{\text{May 5} - \text{Apr. 1}}{91}$		
	= $\frac{12}{46} = 1/4$ nearly.		= $\frac{34}{91} = 1/3$ nearly.		
Elongation	Apr. 23	June 8	Apr. 1	July 1	
For A. = 49.9	+4.4	+13.1	For A. = 101.3	+24.6	+25.4
Now for May 5	+6° 6'		May 5	+24° 9'	
Long. of Sun on 5.5.70	0s 20° 39'		Sun 0s	20° 39'	
Elongation	(+) 6 36		Elong. (+)	24 54	
∴ Mercury =	9 27 15		Venus =	1 15 53	
	(I.E. 0 27 19)			(I.E. 1 15 16)	

# ADVANCE EPHEMERIS

## MARS

The longitude of Mars is given for the zero-date as well as for the 15th of the month. Thus the motion obtained from the given figures is for 15 days during the first half of the month, and for 13 days, 14 days, 15 days or 16 days during the second half. In order to find the longitude for any intermediate date, first convert the interval of days from the zero-date or from the 15th into *Corresponding day* from the following table according to the period for which the motion is obtained.

Period of 13 days		Period of 14 days		Period of 15 days		Period of 16 days	
Interval	Corr. day	Interval	Corr. day	Interval	Corr. day	Interval	Corr. day
d	d	d	d	d	d	d	d
1	1.2	1	1.1	1	1.0	1	0.9
2	2.3	2	2.1	2	2.0	2	1.9
3	3.5	3	3.2	3	3.0	3	2.8
4	4.6	4	4.3	4	4.0	4	3.7
5	5.8	5	5.4	5	5.0	5	4.7
6	6.9	6	6.4	6	6.0	6	5.6
7	8.1	7	7.5	7	7.0	7	6.6
8	9.2	8	8.6	8	8.0	8	7.5
9	10.4	9	9.6	9	9.0	9	8.4
10	11.5	10	10.7	10	10.0	10	9.4
11	12.7	11	11.8	11	11.0	11	10.3
12	13.8	12	12.9	12	12.0	12	11.2
13	15.0	13	13.9	13	13.0	13	12.2
		14	15.0	14	14.0	14	13.1
				15	15.0	15	14.1
						16	15.0

Then take the actual motion of Mars for the first half or the second half of the month as the case may be and from the following table find the movement up to the given date from the zero-date or from the 15th according to the 'Corresponding day' obtained above.

### Movement of Mars up to the given date

Corr. day	Motion for the half month											
	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°
1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8
2	0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6
3	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4
4	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2
5	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0
6	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8
7	0.5	0.9	1.4	1.9	2.3	2.8	3.3	3.7	4.2	4.7	5.1	5.6
8	0.5	1.1	1.6	2.1	2.7	3.2	3.7	4.3	4.8	5.3	5.9	6.4
9	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2
10	0.7	1.3	2.0	2.7	3.3	4.0	4.7	5.3	6.0	6.7	7.3	8.0
11	0.7	1.5	2.2	2.9	3.7	4.4	5.1	5.9	6.6	7.3	8.1	8.8
12	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6
13	0.9	1.7	2.6	3.5	4.3	5.2	6.1	6.9	7.8	8.7	9.5	10.4
14	0.9	1.9	2.8	3.7	4.7	5.6	6.5	7.5	8.4	9.3	10.3	11.2
15	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0

# ADVANCE EPHEMERIS

## OTHER PLANETS

The longitudes of the planets Jupiter to Pluto are given for the zero-date of each month. To obtain the longitude for any intermediate date, find the monthly motion and then take from the following table the movement of the planet up to the given date of the month and apply the same to the longitude for the zero-date.

### Movement up to the given date

Date of month				MONTHLY MOTION							
For month of											
28d	29d	30d	31d	1°	2°	3°	4°	5°	6°	7°	
1.9	1.9	2	2.1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	
3.7	3.9	4	4.1	0.1	0.3	0.4	0.5	0.7	0.8	0.9	
5.6	5.8	6	6.2	0.2	0.4	0.6	0.8	1.0	1.2	1.4	
7.5	7.7	8	8.3	0.3	0.5	0.8	1.1	1.3	1.6	1.9	
9.3	9.7	10	10.3	0.3	0.7	1.0	1.3	1.7	2.0	2.3	
11.2	11.6	12	12.4	0.4	0.8	1.2	1.6	2.0	2.4	2.8	
13.1	13.5	14	14.5	0.5	0.9	1.4	1.9	2.3	2.8	3.3	
14.0	14.5	15	15.5	0.5	1.0	1.5	2.0	2.5	3.0	3.5	
14.9	15.5	16	16.5	0.5	1.1	1.6	2.1	2.7	3.2	3.7	
16.8	17.4	18	18.6	0.6	1.2	1.8	2.4	3.0	3.6	4.2	
18.7	19.3	20	20.7	0.7	1.3	2.0	2.7	3.3	4.0	4.7	
20.5	21.3	22	22.7	0.7	1.5	2.2	2.9	3.7	4.4	5.1	
22.4	23.2	24	24.8	0.8	1.6	2.4	3.2	4.0	4.8	5.6	
24.3	25.1	26	26.9	0.9	1.7	2.6	3.4	4.3	5.2	6.1	
26.1	27.1	28	28.9	0.9	1.9	2.8	3.7	4.7	5.6	6.5	
28.0	29.0	30	31.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	

Note.—When the movement of the planet (Mars to Pluto) is retrograde i.e. the longitude of the planet is decreasing, then the movement up to the date obtained above is to be subtracted from the longitude given for the initial date.

## RAHU

Date	Movement	Date	Movement	Date	Movement	Date	Movement
1	-0.1	9	-0.5	17	-0.9	25	-1.3
2	0.1	10	0.5	18	0.9	26	1.4
3	0.2	11	0.6	19	1.0	27	1.4
4	0.2	12	0.6	20	1.1	28	1.5
5	0.3	13	0.7	21	1.1	29	1.5
6	0.3	14	0.7	22	1.2	30	1.6
7	0.4	15	0.8	23	1.2	31	-1.6
8	-0.4	16	-0.8	24	-1.3		

N.B.—In this Ephemeris the longitude of mean Rahu (i.e. mean node of the lunar orbit) has been given and *not* of the true node. Hence the motion of Rahu is always negative.

# ADVANCE EPHEMERIS

## Conjunctions of Planets with Sun

Tab. I—Date of Mean Conjunction and Common Mean Longitude

Year	MARS		JUPITER		SATURN	
	Date	Long.	Date	Long.	Date	Long.
1951	May 2·64	0 16·34	Mar. 16·13	10 29·52	Sept. 21·53	5 06·18
1952*	...	...	Apr. 18·02	0 02·66	Oct. 3·62	5 18·83
1953	June 20·58	2 05·05	May 21·90	1 05·80	Oct. 16·71	6 01·48
1954	...	...	June 24·78	2 08·95	Oct. 29·81	6 14·13
1955	Aug. 9·52	3 23·76	July 28·67	3 12·09	Nov. 11·90	6 26·79
1956*	...	...	Aug. 30·55	4 15·24	Nov. 23·99	7 09·44
1957	Sept. 27·45	5 12·48	Oct. 3·44	5 18·38	Dec. 7·08	7 22·09
1958	...	...	Nov. 6·32	6 21·52	Dec. 20·17	8 04·74
1959	Nov. 16·39	7 01·19	Dec. 10·21	7 24·66	...	...
1960*	...	...	...	...	Jan. 2·27	8 17·39
1961	...	...	Jan. 12·09	8 27·80	Jan. 14·36	9 00·04
1962	Jan. 4·32	8 19·90	Feb. 14·97	10 00·95	Jan. 27·45	9 12·69
1963	...	...	Mar. 20·86	11 04·09	Feb. 9·54	9 25·34
1964*	Feb. 23·26	10 08·61	Apr. 22·74	0 07·23	Feb. 22·63	10 07·99
1965	...	...	May 26·63	1 10·38	Mar. 6·72	10 20·64
1966	Apr. 13·20	11 27·32	June 29·51	2 13·52	Mar. 19·62	11 03·29
1967	...	...	Aug. 2·39	3 16·67	Apr. 1·91	11 15·94
1968*	June 1·13	1 16·04	Sept. 4·28	4 19·81	Apr. 14·01	11 28·59
1969	...	...	Oct. 8·16	5 22·95	Apr. 27·11	0 11·24
1970	July 21·07	3 04·75	Nov. 11·05	6 26·10	May 10·19	0 23·90
1971	...	...	Dec. 14·93	7 29·24	May 23·28	1 06·55
1972*	Sept. 8·00	4 23·46	...	...	June 4·37	1 19·20
1973	...	...	Jan. 16·81	9 02·39	June 17·46	2 01·85
1974	Oct. 27·94	6 12·17	Feb. 19·70	10 05·53	June 30·55	2 14·50
1975	...	...	Mar. 25·58	11 08·68	July 13·65	2 27·15
1976*	Dec. 15·88	8 00·88	Apr. 27·47	0 11·82	July 25·74	3 09·80
1977	...	...	May 31·35	1 14·96	Aug. 7·83	3 22·46
1978	...	...	July 4·23	2 18·11	Aug. 20·92	4 05·11
1979	Feb. 3·81	9 19·60	Aug. 7·12	3 21·25	Sept. 3·01	4 17·76
1980*	...	...	Sept. 9·00	4 24·40	Sept. 15·11	5 00·41
1981	Mar. 24·75	11 08·31	Oct. 12·89	5 27·54	Sept. 28·20	5 13·06
1982	...	...	Nov. 15·77	7 00·68	Oct. 11·29	5 25·71
1983	May 13·68	0 27·02	Dec. 19·66	8 03·82	Oct. 24·38	6 08·36
1984*	...	...	...	...	Nov. 5·47	6 21·01
1985	July 1·62	2 15·73	Jan. 21·54	9 06·96	Nov. 18·57	7 03·66
1986	...	...	Feb. 24·42	10 10·11	Dec. 1·66	7 16·32
1987	Aug. 20·56	4 04·44	Mar. 30·31	11 13·25	Dec. 14·75	7 28·97
1988*	...	...	May 2·19	0 16·39	Dec. 26·84	8 11·62
1989	Oct. 8·49	5 23·16	June 5·08	1 19·54	...	...
1990	...	...	July 8·96	2 22·68	Jan. 8·93	8 24·27
1991	Nov. 27·43	7 11·87	Aug. 11·84	3 25·83	Jan. 22·03	9 06·92
1992*	...	...	Sept. 13·73	4 28·97	Feb. 4·12	9 19·57
1993	...	...	Oct. 17·61	6 02·11	Feb. 16·21	10 02·22
1994	Jan. 15·36	9 00·58	Nov. 20·50	7 05·26	Mar. 1·80	10 14·87
1995	...	...	Dec. 24·38	8 08·40	Mar. 14·39	10 27·52
1996*	Mar. 5·30	10 19·29	...	...	Mar. 26·49	11 10·17
1997	...	...	Jan. 26·26	9 11·55	Apr. 8·58	11 22·83
1998	Apr. 24·24	0 08·00	Mar. 1·15	10 14·69	Apr. 21·67	0 05·48
1999	...	...	Apr. 4·03	11 17·84	May 4·76	0 18·13
2000*	June 12·17	1 26·72	May 6·92	0 20·98	May 16·85	1 00·78

N.B.—The date commences from 0h I.S.T. (i.e. Indian mid-night).

# ADVANCE EPHEMERIS

## Conjunctions of Planets with Sun

Tab. I.—Date of Mean Conjunction and Common Mean Longitude

Year	MARS		JUPITER		SATURN	
	Date	Long.	Date	Long.	Date	Long.
2001		<sup>s</sup> 0	June 9-80	<sup>s</sup> 1 24.12	May 29-95	<sup>s</sup> 1 13.43
2002	Aug. ... 1-11	3 15.43	July 13-68	2 27.27	June 12-04	1 26.08
2003	...	...	Aug. 16-57	4 00.41	June 25-13	2 08.73
2004*	Sept. 19-04	5 04.14	Sept. 19-45	5 03.56	July 7-22	2 21.38
2005	...	...	Oct. 22-34	6 06.70	July 20-31	3 04.03
2006	Nov. ... 7-98	6 22.85	Nov. 25-22	7 09.84	Aug. 2-41	3 16.68
2007	...	...	Dec. 29-11	8 12.98	Aug. 15-50	3 29.34
2008*	Dec. 26-92	8 11.56	—	—	Aug. 27-59	4 11.99
2009	...	...	Jan. 30-99	9 16.12	Sept. 9-68	4 24.64
2010	...	...	Mar. 5-87	10 19.27	Sept. 22-77	5 07.29
2011	Feb. 14-85	10 00.28	Apr. 8-76	11 22.41	Oct. 5-87	5 19.94
2012*	...	...	May 11-64	0 25.55	Oct. 17-96	6 02.59
2013	Apr. ... 4-79	11 18.99	June 14-53	1 28.70	Oct. 31-05	6 15.24
2014	...	...	July 18-41	3 01.84	Nov. 13-14	6 27.89
2015	May 24-72	1 07.70	Aug. 21-29	4 04.99	Nov. 26-23	7 10.54
2016*	...	...	Sept. 23-18	5 08.13	Dec. 8-33	7 23.19
2017	July 12-66	2 26.41	Oct. 27-06	6 11.27	Dec. 21-42	8 05.85
2018	...	...	Nov. 29-95	7 14.42	—	—
2019	Aug. 31-60	4 15.12	—	—	Jan. 3-51	8 18.50
2020*	...	...	Jan. 2-83	8 17.56	Jan. 16-60	9 01.15
2021	Oct. 19-53	6 03.84	Feb. 4-71	9 20.71	Jan. 28-69	9 13.80
2022	...	...	Mar. 10-60	10 23.85	Feb. 10-79	9 26.45
2023	Dec. ... 8-47	7 22.55	Apr. 13-48	11 27.00	Feb. 23-68	10 09.10
2024*	...	...	May 16-37	1 00.14	Mar. 7-97	10 21.75
2025	...	...	June 19-25	2 03.28	Mar. 21-06	11 04.40
2026	Jan. 26-40	9 11.26	July 23-13	3 06.43	Apr. 3-15	11 17.05
2027	...	...	Aug. 26-02	4 09.57	Apr. 16-24	11 29.70
2028*	Mar. 16-34	10 29.97	Sept. 28-90	5 12.72	Apr. 28-34	0 12.35
2029	...	...	Oct. 31-79	6 15.86	May 11-43	0 25.01
2030	May 5-28	0 18.68	Dec. 4-67	7 19.00	May 24-52	1 07.66
2031	...	...	—	—	June 6-61	1 20.31
2032*	June 23-21	2 07.40	Jan. 7-56	8 22.14	June 18-70	2 02.96
2033	...	...	Feb. 9-44	9 25.28	July 1-80	2 15.61
2034	Aug. 12-15	3 26.11	Mar. 14-32	10 28.43	July 14-69	2 28.26
2035	...	...	Apr. 18-21	0 01.57	July 27-98	3 10.91
2036*	Sept. 30-08	5 14.82	May 21-09	1 04.71	Aug. 9-07	3 23.56
2037	...	...	June 23-98	2 07.66	Aug. 22-16	4 06.21
2038	Nov. 19-02	7 03.53	July 27-86	3 11.00	Sept. 4-26	4 19.86
2039	...	...	Aug. 30-74	4 14.15	Sept. 17-35	5 01.52
2040*	...	...	Oct. 2-63	5 17.29	Sept. 29-44	5 14.17
2041	Jan. 6-96	8 22.24	Nov. 5-51	6 20.43	Oct. 12-53	5 26.82
2042	...	...	Dec. 9-40	7 23.58	Oct. 25-62	6 09.47
2043	Feb. 25-89	10 10.96	—	—	Nov. 7-72	6 22.12
2044*	...	...	Jan. 12-28	8 26.72	Nov. 19-81	7 04.77
2045	Apr. 15-83	11 29.67	Feb. 14-16	9 29.87	Dec. 2-90	7 17.42
2046	...	...	Mar. 20-05	11 03.01	Dec. 15-99	8 00.07
2047	June 4-76	1 18.38	Apr. 22-93	0 06.16	Dec. 29-08	8 12.72
2048*	...	...	May 25-82	1 09.30	—	—
2049	July 23-70	3 07.09	June 28-70	2 12.44	Jan. 10-18	8 25.37
2050	...	...	Aug. 1-58	3 15.59	Jan. 23-27	9 08.03

N.B.—The date commences from 0<sup>h</sup> I.S.T. (i.e. Indian mid-night)

# Conjunctions of Planets with Sun

Tab. II—Correction to time of Mean Conj. and to Mean Longitude

Argument			MARS		JUPITER		SATURN	
Mean Long.	Approx. date		Corr. to time	Corr. to long.	Corr. to time	Corr. to long.	Corr. to time	Corr. to long.
<sup>a</sup>			<sup>d</sup>		<sup>a</sup>		<sup>d</sup>	
8 15	Jan.	0	-20.8	-21.4	-5.7	-6.0	-0.5	-0.6
9 00	Jan.	15	-19.0	-18.9	-6.3	-6.1	-2.6	-2.2
9 15	Jan.	30	-15.3	-14.7	-6.5	-5.7	-4.5	-3.7
10 00	Feb.	15	-9.9	-8.6	-6.2	-5.0	-6.2	-4.9
10 15	Mar.	2	-2.7	-1.1	-5.4	-3.8	-7.5	-5.9
11 00	Mar.	17	+5.1	+6.9	-4.2	-2.4	-8.4	-6.5
11 15	Apr.	1	+11.9	+13.6	-2.7	-0.8	-8.7	-6.7
0 00	Apr.	16	+17.1	+18.7	-1.0	+0.9	-8.4	-6.4
0 15	May	2	+20.5	+21.7	+0.9	+2.6	-7.6	-5.6
1 00	May	17	+21.9	+22.6	+2.6	+4.0	-6.1	-4.5
1 15	June	1	+21.7	+21.9	+4.2	+5.1	-4.1	-2.9
2 00	June	16	+20.3	+20.0	+5.4	+5.8	-1.8	-1.1
2 15	July	2	+17.6	+16.9	+6.2	+6.1	+0.6	+0.7
3 00	July	17	+14.2	+13.2	+6.6	+5.9	+3.1	+2.6
3 15	Aug.	1	+10.3	+9.1	+6.5	+5.4	+5.2	+4.2
4 00	Aug.	16	+6.2	+4.7	+6.0	+4.6	+6.9	+5.4
4 15	Sept.	1	+2.0	+0.4	+5.2	+3.4	+8.1	+6.3
5 00	Sept.	16	-2.2	-3.9	+4.0	+2.1	+8.7	+6.7
5 15	Oct.	1	-6.4	-8.2	+2.6	+0.7	+8.6	+6.6
6 00	Oct.	16	-10.4	-12.2	+1.1	-0.8	+8.0	+6.1
6 15	Nov.	1	-14.0	-15.7	-0.5	-2.3	+6.9	+5.2
7 00	Nov.	16	-17.1	-18.7	-2.1	-3.6	+5.4	+4.0
7 15	Dec.	1	-19.7	-21.0	-3.5	-4.7	+3.6	+2.5
8 00	Dec.	16	-20.9	-21.9	-4.8	-5.5	+1.6	+1.0
8 15	Jan.	0	-20.8	-21.4	-5.7	-6.0	-0.5	-0.6

## Conversion of decimal of the day into hour

Decimal of day	I.S.T.	G.M.T.	Decimal of day	I.S.T.	G.M.T.
	h m	h m		h m	h m
0.0	0 00	18 30*	0.5	12 00	6 30
.1	2 24	20 54*	.6	14 24	8 54
.2	4 48	23 18*	.7	16 48	11 18
.23	5 31	0 01	.73	17 31	12 01
.3	7 12	1 42	.8	19 12	13 42
.4	9 36	4 06	.9	21 36	16 06
0.5	12 00	6 30	1.0	24 00	18 30

\*Previous day of the calendar.

**Rule:** First take the figures of the 'date of mean conjunction' and the 'common mean longitude' for the planet and the year concerned from Table I. Then according to this mean longitude find from Table II the corresponding 'Correction to time' and 'Correction to mean longitude' by simple interpolation, and apply these corrections to the figures taken from Table I. The results will be the date of true conjunction of the planet and the nirayana true longitude common to both the planet and the sun at the time of conjunction. The decimal figure of the date converted by the above table would give the hour of the day.



## ADVANCE EPHEMERIS

### Example of Conjunctions of Planets

Find the date of true conjunction and the common longitude of conjunction of Mars, Jupiter and Saturn with the Sun occurring during the year 1970.

Mars			Jupiter			Saturn		
1970 (Tab. I)	July 21-07	$3-04^{\circ}75'$	Nov.	11-05	$6-26^{\circ}10'$	May	10-19	$0-23^{\circ}90'$
Corr. (Tab. II)	+12-9	+11-8		-1-7	-3-2		-6-7	-5-0
	Aug. 3-0	$3-16^{\circ}6'$	Nov.	9-4	$6-22^{\circ}9'$	May	3-5	$0-18^{\circ}9'$
(Ind. Eph.)	(2-7)	(3-18-3)		(9-5)	(6-23-0)		(3-2)	(0-18-7)

### HELIACAL RISING AND SETTING

The planets set heliacally a few days before conjunction with the Sun and similarly rise some days after conjunction. This phenomena known as combustion of planets occurs when the planet attains the following degrees of difference from the Sun.

Mercury and Venus rise and set both in the West (western horizon) and in the East (eastern horizon). But the planets Mars, Jupiter and Saturn always set in the West and rise in the East.

#### Degrees of difference from Sun

West				East			
	March	Sept.		March	Sept.		
Mercury	R or S 11°	15°	R or S	15°	11°		
Venus	R or S 6	9	R or S	9	6		
Mars	S 14	20	R	20	14		
Jupiter	S 9	13	R	13	9		
Saturn	S 12	18	R	18	12		

*N.B.*—The above degrees vary also according to the latitude of the place of observation. The figures given above are for 23° North latitude.

### RETROGRESSION OF PLANETS

The planets Mercury and Venus remain retrograde in motion during the time of inferior conjunction with the Sun. They become retrograde near about heliacal setting in the West and direct near heliacal rising in the East. The angular distance from the Sun, on either side, at which they become so are as follows :

Mercury...14° to 22° ; Venus...about 29°.

The superior planets remain retrograde near the time of opposition, i.e. when 'Planet-Sun' is 6 signs or 180 degrees. Approximate values of the angular distance 'Planet-Sun' at which they become retrograde or direct are stated below :

Mars	R 7s 18° and D 4s 12°	Herschel	R 8s 17° and D 3s 13°
Jupiter	R 8s 5° and D 3s 25°	Neptune	R 8s 19° and D 3s 11°
Saturn	R 8s 11° and D 3s 19°	Pluto	R 8s 20° and D 3s 10°

## PHENOMENA

The different phenomena of planets occurring in a synodic period are given below starting from certain dates of conjunction. The 'day' given shows the number of days from conjunction after which the phenomena occurs. The 'degree' represents in case of Mercury and Venus the elongation of the planet from the Sun. In case of superior planets it represents the degree by which the planet is ahead of its position of the last conjunction; those in brackets however give the distance from the Sun on that day.

By simple interpolation according to the initial date of conjunction the dates of other phenomena can be approximately determined by applying the estimated intervals to the initial date or by utilising the longitude differences.

### Inferior Planets

Date of C.	MERCURY				VENUS				
	Dec. 7	Mar. 13	June 4	Sept. 10	Jan. 24	Apr. 12	June 20	Aug. 30	Nov. 9
Sup. conj.	d 0 0	d 0 0	d 0 0	d 0 0	d 0 0	d 0 0	d 0 0	d 0 0	d 0 0
Rising W	19 11	12 11	9 10	19 14	25 6	23 6	24 7	27 7	28 7
Gt. Elong.	37 19	25 19	36 26	46 24	230 46	217 47	220 47	224 46	223 45
Retrogr.	44 16	34 15	50 21	57 20	269 30	268 30	271 30	273 29	272 29
Setting W	48 11	39 10	52 19	61 15	282 13	286 13	289 6	290 8	283 16
Inf. conj.	53 0	45 0	64 0	68 0	290 0	289 0	292 0	294 0	294 0
Rising E	58-10	57-17	72-11	73-10	294-6	292-4	294-2	300-8	293-5
Direct	65-21	58-18	74-14	77-16	311-27	309-28	313-28	316-28	315-29
Gt. Elong.	78-27	72-25	82-18	85-20	361-47	359-46	362-46	365-46	365-47
Setting E	104-17	95-13	96-11	110-11	559-6	552-6	555-6	552-10	557-9
Sup. conj.	122 0	106 0	107 0	130 0	580 0	576 0	583 0	591 0	589 0
Date	Apr. 8	June 27	Sept. 19	Jan. 18	Aug. 30	Nov. 9	Jan. 24	Apr. 12	June 20

### Superior Planets

Conj.	Rising E	Retrogress.	Oppo.	Direct	Setting W	Conj.
MARS						
Mar. 17	d 64 49 (-14)	d 332 195 (-132)	d 371 186 413 176 (+129)	d 739 382 (+14)	d 766 424	
June 21	48 31 (-14)	310 166 (-140)	344 160 382 151 (+136)	721 366 (+16)	772 399	
Sept. 21	42 28 (-14)	394 245 (-134)	421 236 455 229 (+139)	706 356 (+20)	769 398	
Dec. 14	36 66 (-21)	377 243 (-129)	417 253 457 223 (+131)	728 373 (+16)	795 426	
JUPITER						
Jan. 1	12 3 (-9)	140 22 (-117)	200 17 261 12 (+117)	387 31 (+9)	398 34	
Apr. 17	13 3 (-9)	146 24 (-118)	205 19 263 14 (+117)	391 34 (+9)	403 36	
July 5	12 3 (-8)	139 21 (-113)	199 16 259 11 (+115)	385 28 (+11)	399 32	
Oct. 9	11 2 (-8)	134 20 (-115)	194 15 257 10 (+115)	382 27 (+11)	396 30	
SATURN						
Jan. 0	15 2 (-13)	118 9 (-108)	189 6 259 3 (+110)	363 10 (+13)	377 11	
Mar. 23	13 3 (-19)	124 10 (-109)	193 7 261 3 (+109)	365 11 (+12)	379 13	
July 6	17 2 (-13)	124 11 (-109)	19 7 255 4 (+108)	365 12 (+13)	380 14	
Oct. 11	16 2 (-14)	117 9 (-109)	185 6 256 3 (+108)	363 10 (+13)	377 12	

N.B.—Here W means the western horizon and the planet visible in the evening sky before sunset and E means the eastern horizon and planet visible in the morning sky before sunrise. The phenomena of heliacal setting and rising are for the Central Station of India, 23° 11' North latitude.

# ADVANCE EPHEMERIS

## DECLINATION OF SUN

The declination of Sun can be found from the following table according to the tropical or *sāyana* longitude of the Sun. (Tropical longitude is obtained by adding *ayanamsa* to the Nirayana longitude). When the longitude is less than  $180^\circ$ , the declination is North; when greater than  $180^\circ$ , then deduct  $180^\circ$  from the longitude and find the declination which is then South.

Trop. Long.	Decl.	Trop. Long.	Decl.	Trop. Long.	Decl.	Trop. Long.	Decl.	Trop. Long.	Decl.	Trop. Long.	Decl.	Trop. Long.
0	0 0	180	23	8 57	157	46	18 39	134	69	21 49	111	
1	0 24	179	24	9 19	156	47	16 56	133	70	21 58	110	
2	0 48	178	25	9 41	155	48	17 12	132	71	22 7	109	
3	1 12	177	26	10 3	154	49	17 29	131	72	22 15	108	
4	1 36	176	27	10 24	153	50	17 45	130	73	22 23	107	
5	1 59	175	28	10 46	152	51	18 1	129	74	22 30	106	
6	2 23	174	29	11 7	151	52	18 17	128	75	22 37	105	
7	2 47	173	30	11 29	150	53	18 32	127	76	22 43	104	
8	3 11	172	31	11 50	149	54	18 47	126	77	22 49	103	
9	3 34	171	32	12 11	148	55	19 2	125	78	22 55	102	
10	3 58	170	33	12 31	147	56	19 16	124	79	23 0	101	
11	4 21	169	34	12 52	146	57	19 30	123	80	23 5	100	
12	4 45	168	35	13 12	145	58	19 44	122	81	23 9	99	
13	5 8	167	36	13 32	144	59	19 57	121	82	23 13	98	
14	5 31	166	37	13 52	143	60	20 10	120	83	23 16	97	
15	5 55	165	38	14 11	142	61	20 22	119	84	23 19	96	
16	6 18	164	39	14 30	141	62	20 34	118	85	23 22	95	
17	6 41	163	40	14 49	140	63	20 46	117	86	23 24	94	
18	7 4	162	41	15 8	139	64	20 58	116	87	23 25	93	
19	7 27	161	42	15 27	138	65	21 9	115	88	23 26	92	
20	7 50	160	43	15 45	137	66	21 19	114	89	23 27	91	
21	8 12	159	44	16 3	136	67	21 30	113	90	23 27	90	
22	8 34	158	45	16 21	135	68	21 40	112	—	—	—	

## LATITUDE OF MOON

To be obtained from 'Moon—Rahu' i.e. D - R.

CE	Lat.	CE	Lat.	CE	Lat.	CE	Lat.	CE	Lat.	CE	Lat.
0	N 0 8	360	45	N 3 38	315	90	N 5 9	270	135	N 3 38	225
5	0 27	355	50	3 56	310	95	5 7	265	140	3 18	220
10	0 54	350	55	4 13	305	100	5 4	260	145	2 57	215
15	1 20	345	60	4 27	300	105	4 58	255	150	2 34	210
20	1 46	340	65	4 40	295	110	4 50	250	155	2 10	205
25	2 10	335	70	4 50	290	115	4 40	245	160	1 46	200
30	2 34	330	75	4 58	285	120	4 27	240	165	1 20	195
35	2 57	325	80	5 4	280	125	4 13	235	170	0 54	190
40	3 18	320	85	5 7	275	130	3 56	230	175	0 27	185
45	N 3 38	315	90	N 5 9	270	135	N 3 38	225	180	N 0 8	180

## DECLINATION OF MOON

( And also of other planets )

When the latitude of the moon or of any planet is known, then the corresponding declination can be found in the following way.

First find the tropical or *sayana* longitude of the planet by adding *ayanamsa* to the *nirayana* longitude. Then find the declination according to this tropical longitude from the table given for Sun, which may be called the *declination of place*. Now add the latitude to the declination so found, and the result is the required declination of the moon or the planet in question.

The latitude and declination are *+ve* when North and *-ve* when South. While making the addition, it is to be done algebraically taking into account the sign of both.

When the declination is required to be determined with greater accuracy then a slightly lesser value of latitude, known as *reduced latitude*, is to be applied to the declination of place. The reduced latitude is obtained by multiplying the latitude of the planet by the *multiplier* taken from the following table given against the tropical longitude of the planet.

Tropical long. of planet		Multiplier	Tropical long. of planet	
0	180	0.917	180	360
10	170	.920	190	350
20	160	.926	200	340
30	150	.936	210	330
40	140	.949	220	320
50	130	.963	230	310
60	120	.977	240	300
70	110	.989	250	290
80	100	0.997	260	280
90	90	1.000	270	270

## Examples of Declination

**Example 1**—Required the declination of Moon on Jan. 0, 1972, when its tropical longitude =  $87^{\circ} 38'$  and latitude =  $+3^{\circ} 12'$

For long.  $88^{\circ}$ , the multiplier = .999

Reduced latitude =  $+3^{\circ} 12' \times .999 = +3^{\circ} 12'$

Declination of place =  $+23^{\circ} 26'$

$\therefore$  Declination of Moon =  $+23^{\circ} 26' + 3^{\circ} 12' = +26^{\circ} 38'$  ( Ind. Eph.  $26^{\circ} N 37'$  )

**Example 2**—Find the declination of Mercury on Aug. 1, 1972, when its trop. long. =  $140^{\circ} 18'$  and latitude =  $-4^{\circ} 41'$

For long.  $140^{\circ}$ , the multiplier is .949

Reduced latitude =  $-4^{\circ} 41' \times .949 = -4^{\circ} 27'$

Declination of place =  $+14^{\circ} 43'$

$\therefore$  Declination of Mercury =  $+14^{\circ} 43' - 4^{\circ} 27' = +10^{\circ} 16'$  ( I. E.  $10^{\circ} N 17'$  )

## LATITUDE OF INFERIOR PLANETS

For finding the latitude of Mercury and Venus first take the value of  $A_0$  of the planet for the day and determine the value of  $A_0 + a$  after adding to it  $a$  taken from the following table.

### Values of $a$ for Mercury and Venus

Date	Mercury	Venus	Var. for	Mercury	Venus
Jan. 0	65.0	239.8	1 day	0.3	1.6
Feb. 0	74.9	289.4	2 days	0.6	3.2
Mar. 0	83.8	334.2	3 "	1.0	4.8
Apr. 0	93.6	383.7	4 "	1.3	6.4
May 0	103.1	431.7	5 "	1.6	8.0
June 0	112.9	481.2	6 "	1.9	9.6
July 0	6.6	529.2	7 "	2.2	11.2
Aug. 0	16.4	578.8	8 "	2.5	12.8
Sept. 0	26.2	44.4	9 "	2.9	14.4
Oct. 0	35.8	92.4	10 "	3.2	16.0
Nov. 0	45.6	141.9	20 "	6.3	32.0
Dec. 0	55.1	189.9	30 "	9.5	48.0
Jan. 0	65.0	239.4	31 "	9.8	49.6

Daily motion of  $A_0 + a$  for Mercury is 1.32 and for Venus 2.6  
 Period of  $A_0$ ,  $a$ , and  $A_0 + a$  for Mercury = 115.9, for Venus = 583.9  
 ( $A_0 + a$  is the mean anomaly in units of  $3^{\circ}16'$  and  $0^{\circ}61'$  respectively)

### Latitude at unit distance

MERCURY				VENUS			
$A_0 + a$	Lat.	$A_0 + a$	Lat.	$A_0 + a$	Lat.	$A_0 + a$	Lat.
0	+1.06	58	-1.60	0	+1.99	292	-2.02
5	1.74	63	2.07	24	2.29	316	2.32
10	2.18	68	2.45	49	2.43	341	2.46
14	2.38	72	2.73	73	2.41	365	2.43
19	2.34	77	2.91	97	2.22	389	2.24
24	2.11	82	2.93	122	1.86	414	1.87
29	1.72	87	2.79	146	1.39	438	1.39
34	1.23	92	2.50	170	0.83	462	0.82
39	0.69	97	2.03	195	+0.20	487	-0.19
43	+0.09	101	1.37	219	-0.44	511	+0.43
48	-0.50	106	-0.58	243	1.05	535	1.04
53	1.06	111	+0.25	268	1.59	560	1.57
58	-1.60	116	+1.06	292	-2.02	584	+1.99

When the above latitude is divided by the distance of the planet from the Sun, then the heliocentric latitude is obtained. Similarly when multiplied by the reciprocal of the distance from the Earth, then we get the geocentric latitude.

### Multiplier for getting geocentric latitude

Date	MERCURY			VENUS		
	At Sup. conj.	At Gt. elongation	At Inf. conj.	At Sup. conj.	At Gt. elongation	At Inf. conj.
Mar. 8	0.73	1.07	1.60	0.58	1.40	3.66
June 8	.75	1.07	1.83	.58	1.40	3.46
Sept. 9	.73	1.07	1.56	.58	1.40	3.57
Dec. 10	.69	1.07	1.49	.58	1.40	3.78
Mar. 8	0.73	1.07	1.60	0.58	1.40	3.66

# ADVANCE EPHEMERIS

## LATITUDE OF MARS

First take the longitude of Mars and subtract from it the longitude of Sun, and according to this difference take the values of 'Correction' and 'Multiplier' from the following table.

Mars - Sun	Correction to Mars	Multiplier for Lat.	Mars - Sun	Correction to Mars	Multiplier for Lat.
<sup>s</sup> 0 0	<sup>s</sup> +0 00	0.39	<sup>s</sup> 6 0	<sup>s</sup> -0 00	2.01
0 15	0 10	0.40	6 15	0 10	2.00
1 0	0 19	0.43	7 0	0 19	1.96
1 15	0 28	0.48	7 15	0 28	1.82
2 0	1 05	0.58	8 0	1 05	1.56
2 15	1 09	0.73	8 15	1 09	1.25
3 0	1 11	0.95	9 0	1 11	0.95
3 15	1 09	1.25	9 15	1 09	0.73
4 0	1 05	1.56	10 0	1 05	0.58
4 15	0 29	1.82	10 15	0 29	0.48
5 0	0 20	1.96	11 0	0 20	0.43
5 15	0 10	2.00	11 15	0 10	0.40
6 0	+0 00	2.01	12 0	-0 00	0.39

Apply the correction to the longitude of Mars and against this corrected longitude take the value of latitude from the following table. Multiply the latitude by the multiplier as obtained from the above table and the result is the geocentric latitude of the planet. (This corrected longitude is the heliocentric longitude).

Corrected Long.	Latitude	Corrected Long.	Latitude	Corrected Long.	Latitude
<sup>s</sup> 0 26	+ 0.00	<sup>s</sup> 4 26	+ 2.66	<sup>s</sup> 8 26	- 2.27
1 11	0.72	5 11	2.14	9 11	2.49
1 26	1.44	5 26	1.51	9 26	2.56
2 11	2.06	6 11	+ 0.76	10 11	2.46
2 26	2.58	6 26	0.00	10 26	2.22
3 11	2.92	7 11	- 0.73	11 11	1.82
3 26	2.99	7 26	1.37	11 26	1.31
4 11	2.97	8 11	1.88	0 11	0.69
4 26	+ 2.66	8 26	- 2.27	0 26	- 0.00

### NOTE

After finding the latitude in case of the planets Mercury, Venus and Mars the corresponding declination is to be obtained by the method given on page 80.

As regards the outer planets Jupiter to Pluto, their latitude (and also declination) can be roughly obtained directly according to the *Nirayana* longitude of the planet from the table given on the next page. For Jupiter and Saturn a small correction has been indicated at the bottom of the table which may be applied to the latitude if greater accuracy is desired.

# ADVANCE EPHEMERIS

## LATITUDE and DECLINATION of OUTER PLANETS

(According to Nirayana Longitude)

Jupiter			Saturn			Herschel			Neptune		
Long.	Lat.	Decl.	Long.	Lat.	Decl.	Long.	Lat.	Decl.	Long.	Lat.	Decl.
2 17	+0°	+23°	3 0	+0°	+21°	1 20	+0°	+22°	3 18	+0°	+17°
3 2	0°3	21°3	3 15	0°6	18°6	2 5	0°2	23°7	4 3	0°5	13°0
3 17	0°7	18°2	4 0	1°3	14°8	2 20	0°4	23°1	4 18	0°9	8°0
4 2	0°9	13°8	4 15	1°8	10°0	3 5	0°6	21°0	5 3	1°3	+ 2°5
4 17	1°1	8°6	5 0	2°2	+ 4°6	3 20	0°7	17°4	5 18	1°5	- 3°3
5 2	1°3	+ 2°9	5 15	2°4	- 1°2	4 5	0°7	12°5	6 3	1°7	8°7
5 17	1°3	- 3°0	6 0	2°5	6°8	4 20	0°8	7°1	6 18	1°8	13°7
6 2	1°3	8°7	6 15	2°4	12°1	5 5	0°7	+ 1°1	7 3	1°7	17°8
6 17	1°1	14°0	7 0	2°2	16°6	5 20	0°7	- 4°8	7 18	1°5	20°9
7 2	0°9	18°4	7 15	1°8	20°0	6 5	0°6	10°5	8 3	1°3	22°1
7 17	0°7	21°4	8 0	1°3	22°0	6 20	0°4	15°6	8 18	0°9	22°0
8 2	+0°3	-23°1	8 15	+0°6	-22°6	7 5	+0°2	-19°7	9 3	+0°5	-20°3
8 17	-0°0	-23°0	9 0	-0°0	-21°3	7 20	-0°0	-22°5	9 18	-0°0	-17°2
9 2	0°2	21°3	9 15	0°6	18°6	8 5	0°2	23°7	10 3	0°5	13°0
9 17	0°7	18°2	10 0	1°3	14°8	8 20	0°4	23°1	10 18	0°9	8°0
10 2	0°9	13°8	10 15	1°8	10°0	9 5	0°6	21°0	11 3	1°3	- 2°5
10 17	1°1	8°6	11 0	2°2	- 4°6	9 20	0°7	17°4	11 18	1°5	+ 3°3
11 2	1°3	- 2°9	11 15	2°4	+ 1°2	10 5	0°7	12°5	0 3	1°7	8°7
11 17	1°3	+ 3°0	0 0	2°5	6°8	10 20	0°8	7°1	0 18	1°8	13°7
0 2	1°3	8°7	0 15	2°4	12°1	11 5	0°7	- 1°1	1 3	1°7	17°8
0 17	1°1	14°0	1 0	2°2	16°6	11 20	0°7	+ 4°8	1 18	1°5	20°9
1 2	0°9	18°4	1 15	1°8	20°0	0 5	0°6	10°5	2 3	1°3	22°1
1 17	0°7	21°4	2 0	1°3	22°0	0 20	0°4	15°6	2 18	0°9	22°0
2 2	0°3	23°1	2 15	0°6	22°6	1 5	0°2	19°7	3 3	0°5	20°3
2 17	-0°0	+23°0	3 0	-0°0	+21°3	1 20	-0°0	+22°5	3 18	-0°0	+17°2

N.B.—Near conjunction with Sun, the latitude is slightly diminished and near opposition slightly increased in value; the multiplying factor to be applied to the above latitude for this purpose is 0·8 and 1·2 for Jupiter, and 0·9 and 1·1 for Saturn at conjunction and opposition respectively.

## Pluto

Long.	Lat.	Decl.	Long.	Lat.	Decl.	Long.	Lat.	Decl.
2 26	+ 0°0	+22°0	6 26	+14°8	- 3°6	10 26	-14°8	-17°6
3 6	3°0	23°1	7 6	13°1	7°4	11 6	16°1	14°8
3 16	5°9	23°5	7 16	11°0	11°1	11 16	16°9	11°5
3 26	8°6	23°0	7 26	8°6	14°5	11 26	17°1	8°0
4 6	11°0	21°8	8 6	5°9	17°6	0 6	16°9	4°3
4 16	13°1	19°9	8 16	+ 3°0	20°1	0 16	16°1	- 0°5
4 26	14°8	17°6	8 26	0°0	22°0	0 26	14°8	+ 3°6
5 6	16°1	14°8	9 6	- 3°0	23°1	1 6	13°1	7°4
5 16	16°9	11°5	9 16	5°9	23°5	1 16	11°0	11°1
5 26	17°1	8°0	9 26	8°6	23°0	1 26	8°6	14°5
6 6	16°9	4°3	10 6	11°0	21°8	2 6	5°9	17°6
6 16	16°1	+ 0°5	10 16	13°1	19°9	2 16	3°0	20°1
6 26	+14°8	- 3°6	10 26	-14°8	-17°6	2 26	- 0°0	+22°0

# ADVANCE EPHEMERIS

## TRANSIT OF SUN

(Sun's entry into Nirayana Rasis)

The times of transit of the Sun into different *Rasis* are given below for the four years 1951, 1952, 1953 and 1954, and corrections for getting the corresponding figures for other years are given separately. The time is in I. S. T. reckoned from 0h mid-night.

Rasi	1951		1952*		1953		1954	
	d	h	d	h	d	h	d	h
Makara	Jan. 14	9.5	Jan. 14	15.6	Jan. 13	21.8	Jan. 14	3.9
Kumbha	Feb. 12	22.4	Feb. 13	4.6	Feb. 12	10.8	Feb. 12	16.9
Mina	Mar. 14	19.4	Mar. 14	1.5	Mar. 14	7.7	Mar. 14	13.8
Mesha	Apr. 14	3.2	Apr. 13	10.1	Apr. 13	16.2	Apr. 13	22.4
Vrisha	May 15	0.8	May 14	7.0	May 14	13.1	May 14	19.3
Mithuna	June 15	7.5	June 14	13.6	June 14	19.8	June 15	1.9
Karkata	July 16	18.4	July 16	0.5	July 16	6.7	July 16	12.8
Simha	Aug. 17	2.8	Aug. 16	8.9	Aug. 16	15.1	Aug. 16	21.2
Kanya	Sept. 17	2.7	Sept. 16	8.8	Sept. 16	15.0	Sept. 16	21.1
Tula	Oct. 17	14.6	Oct. 16	20.7	Oct. 17	2.9	Oct. 17	9.0
Vrischika	Nov. 16	14.3	Nov. 15	20.5	Nov. 16	2.6	Nov. 16	8.8
Dhanus	Dec. 16	4.9	Dec. 15	11.1	Dec. 15	17.2	Dec. 15	23.4

## Correction for other years

For 1955, use 1951 and add 0.6h ; For 1956, use 1952 and add 0.6h.  
For 1957, use 1953 and add 0.6h ; For 1958, use 1954 and add 0.6h.

In this way the transit times for other years may be obtained from the figures for the four basic years 1951 to 1954 by applying the corrections given below for different 4-yearly cycles.

For years	Correction	For years	Correction	For years	Correction
	h		h		h
1903-1906	-7.3	1955-1958	+0.6	2003-2006	-7.9
1907-1910	6.7	1959-1962	1.2	2007-2010	8.6
1911-1914	6.1	1963-1966	1.8	2011-2014	9.2
1915-1918	5.5	1967-1970	2.4	2015-2018	9.8
1919-1922	4.9	1971-1974	3.1	2019-2022	10.4
1923-1926	4.3	1975-1978	3.7	2023-2026	11.0
1927-1930	3.7	1979-1982	4.3	2027-2030	11.6
1931-1934	3.1	1983-1986	4.9	2031-2034	12.2
1935-1938	2.4	1987-1990	5.5	2035-2038	12.8
1939-1942	1.8	1991-1994	6.1	2039-2042	13.4
1943-1946	1.2	1995-1998	6.7	2043-2046	14.0
1947-1950	-0.6	1999-2002	+7.3	2047-2050	+14.7

Further correction for 100 yrs.+0d 15.3h; 200 yrs.+1d 6.5h;  
300 yrs.+1d 21.8h; 400 yrs.+2d 13.1h; 500 yrs.+3d 4.4h.

(The corrections are negative for earlier centuries)



# ADVANCE EPHEMERIS

## SUN'S TRANSIT ACCORDING TO SURYA-SIDDHANTA

The times of different Samkrantis (Sun's entry into *Rasis*) according to the old school Panchangs following Surya-Siddhanta calculations are given below in I.S.T. reckoned from 0<sup>h</sup> mid-night.

Rasi	1951	1952*	1953	1954
	d h	d h	d h	d h
Makara	Jan. 14 11.3	Jan. 14 17.5	Jan. 13 23.7	Jan. 14 5.9
Kumbha	Feb. 12 22.1	Feb. 13 4.3	Feb. 12 10.6	Feb. 12 16.8
Mina	Mar. 14 17.8	Mar. 14 0.0	Mar. 14 6.2	Mar. 14 12.4
Mesha	Apr. 14 2.1	Apr. 13 8.3	Apr. 13 14.5	Apr. 13 20.7
Vrisha	May 15 0.4	May 14 6.7	May 14 12.9	May 14 19.1
Mithuna	June 15 10.6	June 14 16.8	June 14 23.0	June 15 5.2
Karkata	July 17 2.1	July 16 8.4	July 16 14.6	July 16 20.8
Simha	Aug. 17 13.5	Aug. 16 19.7	Aug. 17 1.9	Aug. 17 8.1
Kanya	Sept. 17 13.8	Sept. 16 20.0	Sept. 17 2.2	Sept. 17 8.4
Tula	Oct. 18 0.3	Oct. 17 6.5	Oct. 17 12.7	Oct. 17 18.9
Vrischika	Nov. 16 21.7	Nov. 16 3.9	Nov. 16 10.1	Nov. 16 16.3
Dhanus	Dec. 16 9.7	Dec. 15 15.9	Dec. 15 22.1	Dec. 16 4.3

### Correction for other years

For years	Correction	For years	Correction	For years	Correction
	h		h		h
1903-1906	-10.1	1955-1958	+0.8	2003-2006	+10.9
1907-1910	9.2	1959-1962	1.7	2007-2010	11.8
1911-1914	8.4	1963-1966	2.5	2011-2014	12.6
1915-1918	7.6	1967-1970	3.4	2015-2018	13.4
1919-1922	6.7	1971-1974	4.2	2019-2022	14.3
1923-1926	5.9	1975-1978	5.0	2023-2026	15.1
1927-1930	5.0	1979-1982	5.3	2027-2030	16.0
1931-1934	4.2	1983-1986	6.7	2031-2034	16.8
1935-1938	3.4	1987-1990	7.6	2035-2038	17.7
1939-1942	2.5	1991-1994	8.4	2039-2042	18.5
1943-1946	1.7	1995-1998	9.2	2043-2046	19.3
1947-1950	-0.8	1999-2002	+10.1	2047-2050	+20.2

Correction for 100 yrs. +0d 21.0h; 200 yrs. +1d 18.0h;  
300 yrs. +2d 15.0h; 400 yrs. +3d 12.1h;  
500 yrs. +4d 9.1h;

(The corrections are negative for earlier centuries)

Note—The times of Samkranti (in L.M.T. or I.S.T.) given in the old school Panchangs that follow the Surya-Siddhanta calculations, and consequential determination of first day of the month of the related solar calendar are based on the above figures. For some of such Panchangs a further small correction is required to be applied arising out of erroneous determination of *Desantar* (Longitude from Ujjain) by the earlier observers. For the old school Bengali Panchang (considered to be for Calcutta) the value of such correction is +0.2 h.

# ADVANCE EPHEMERIS

## SAYANA TRANSIT OF SUN

(Sun's entry into Tropical Signs or Sayana Rasis)

The times of transit for the four basic years are given below from which the figures for other years can be obtained. The time is in I.S.T. reckoned from 0h midnight.

Sign	1951		1952*		1953		1954	
	d	h	d	h	d	h	d	h
Aquarius	Jan. 21	2.4	Jan. 21	8.2	Jan. 20	13.9	Jan. 20	19.7
Pisces	Feb. 19	16.7	Feb. 19	22.5	Feb. 19	4.2	Feb. 19	16.0
Aries	Mar. 21	15.9	Mar. 20	21.7	Mar. 21	3.5	Mar. 21	9.3
Taurus	Apr. 21	3.3	Apr. 20	9.1	Apr. 20	14.9	Apr. 20	20.7
Gemini	May 22	2.8	May 21	8.6	May 21	14.4	May 21	20.2
Cancer	June 22	10.9	June 21	16.7	June 21	22.5	June 22	4.3
Leo	July 23	21.8	July 23	3.6	July 23	9.4	July 23	15.2
Virgo	Aug. 24	4.8	Aug. 23	10.6	Aug. 23	16.3	Aug. 23	22.1
Libra	Sept. 24	2.1	Sept. 23	7.9	Sept. 23	13.6	Sept. 23	19.4
Scorpio	Oct. 24	11.1	Oct. 23	16.9	Oct. 23	22.6	Oct. 24	4.4
Sagittarius	Nov. 23	8.4	Nov. 22	14.1	Nov. 22	19.9	Nov. 23	1.7
Capricornus	Dec. 22	21.5	Dec. 22	3	Dec. 22	9.1	Dec. 22	14.9

N.B.—Sun's entry into *Aries* (Sayana Mesha) and *Libra* (Sayana Tula) are the dates of equinoxes; its entry into *Cancer* (Sayana Karkati) and *Capricornus* (Sayana Makara) are dates of solstices.

## Correction for other years

The corrections for other years are to be applied to the figures for the above four basic years in the same way as indicated in the case of Sun's entry into Nirayana Rasis.

For years	Correction	For years	Correction	For years	Correction
	h		h		h
1903-1906	+9.0	1955-1958	-0.7	2003-2006	- 9.7
1907-1910	8.2	1959-1962	1.5	2007-2010	10.5
1911-1914	7.5	1963-1966	2.2	2011-2014	11.2
1915-1918	6.7	1967-1970	3.0	2015-2018	12.0
1919-1922	6.0	1971-1974	3.7	2019-2022	12.7
1923-1926	5.2	1975-1978	4.5	2023-2026	13.5
1927-1930	4.5	1979-1982	5.2	2027-2030	14.2
1931-1934	3.7	1983-1986	6.0	2031-2034	15.0
1935-1938	3.0	1987-1990	6.7	2035-2038	15.7
1939-1942	2.2	1991-1994	7.5	2039-2042	16.5
1943-1946	1.5	1995-1998	8.2	2043-2046	17.2
1947-1950	+0.7	1999-2002	-9.0	2047-2050	-18.0

Further correction for 100 yrs.—Cd 15.7h; 200 yrs.—1d 13.4h; 300 yrs.—2d 8.2h  
400 yrs.—3d 2.9h; 500 yrs.—3d 21.6h.

N.B.—When the given year is earlier than the span of the above table, then the correction for the century is to be applied *inversely*, i.e., in this case, with a *positive* sign.

# ADVANCE EPHEMERIS

## Solar Return or *Varṣapraveś*

The moment in each year when the *nirayana* or sidereal longitude of the Sun becomes equal to the longitude of Sun at the time of birth of the native, is the moment of Solar return or *Varṣapraveś*.

Method of calculation :—Write down the day of week at birth ( 0 for Saturday, 1 for Sunday, etc. ) and with it write the birth time reckoned from 0 to 24 hours counted from 6<sup>h</sup> A.M. or 0<sup>h</sup> Midnight or in any other system of time reckoning. Take from the following table the figures given against the age of the person (completed number of years) and add it to the above figures. The result gives the day of week and time of *Varṣapraveś*. The English date on the day of week so obtained will be very near to the date of birth or will exactly agree with it.

Year	d	h	m	Year	d	h	m	Year	d	h	m
1	1	6	9.2	41	2	12	15.7	81	3	18	22.1
2	2	12	18.3	42	3	18	24.8	82	5	0	31.3
3	3	18	27.5	43	5	0	34.0	83	6	6	40.5
4	5	0	36.6	44	6	6	43.1	84	0	12	49.6
5	6	6	45.8	45	0	12	52.3	85	1	18	58.8
6	0	12	55.0	46	1	19	1.5	86	3	1	8.0
7	1	19	4.1	47	3	1	10.6	87	4	7	17.1
8	3	1	13.3	48	4	7	19.8	88	5	13	26.3
9	4	7	22.5	49	5	13	29.0	89	6	19	35.4
10	5	13	31.6	50	6	19	38.1	90	1	1	44.6
11	6	19	40.8	51	1	1	47.3	91	2	7	53.8
12	1	1	49.9	52	2	7	56.4	92	3	14	2.9
13	2	7	59.1	53	3	14	5.6	93	4	20	12.1
14	3	14	8.3	54	4	20	14.8	94	6	2	21.3
15	4	20	17.4	55	6	2	23.9	95	0	8	30.4
16	6	2	26.6	56	0	8	33.1	96	1	14	39.6
17	0	8	35.8	57	1	14	42.3	97	2	20	48.7
18	1	14	44.9	58	2	20	51.4	98	4	2	57.9
19	2	20	54.1	59	4	3	0.6	99	5	9	7.1
20	4	3	3.2	60	5	9	9.7	100	6	15	16.2
21	5	9	12.4	61	6	15	18.9	101	0	21	25.4
22	6	15	21.6	62	0	21	28.1	102	2	3	34.5
23	0	21	30.7	63	2	3	37.2	103	3	9	43.7
24	2	3	39.9	64	3	9	46.4	104	4	15	52.8
25	3	9	49.1	65	4	15	55.6	105	5	22	2.0
26	4	15	58.2	66	5	22	4.7	106	0	4	11.2
27	5	22	7.4	67	0	4	13.9	107	1	10	20.3
28	0	4	16.5	68	1	10	23.0	108	2	16	29.5
29	1	10	25.7	69	2	16	32.2	109	3	22	38.7
30	2	16	34.9	70	3	22	41.4	110	5	4	47.8
31	3	22	44.0	71	5	4	50.5	111	6	10	57.0
32	5	4	53.2	72	6	10	59.7	112	0	17	6.1
33	6	11	2.4	73	0	17	8.9	113	1	23	15.3
34	0	17	11.5	74	1	23	18.0	114	3	5	24.5
35	1	23	20.7	75	3	5	27.2	115	4	11	33.6
36	3	5	29.8	76	4	11	36.3	116	5	17	42.8
37	4	11	39.0	77	5	17	45.5	117	6	23	52.0
38	5	17	48.2	78	6	23	54.7	118	1	6	1.1
39	6	23	57.3	79	1	6	3.8	119	2	12	10.3
40	1	6	6.5	80	2	12	13.0	120	3	18	19.4

# ADVANCE EPHEMERIS

## NEW MOON and FULL MOON

The time of mean New Moon in I.S.T. and the value of corresponding Lunar Anomaly ( $=A$ ) for the four basic years 1951 to 1954 are given below.

1951			1952 (Leap-year)			1953			1954		
Time		$A$	Time		$A$	Time		$A$	Time		$A$
d	h		d	h		d	h		d	h	
Dec. 9	18.2	0.89	Dec. 28	15.8	28.86	Dec. 17	0.6	24.68	Dec. 6	9.4	20.49
Jan. 8	6.9	3.04	Jan. 27	4.5	1.01	Jan. 15	13.3	26.83	Jan. 4	22.1	22.64
Feb. 6	18.7	5.19	Feb. 25	17.2	3.16	Feb. 14	2.0	28.98	Feb. 3	10.9	24.80
Mar. 8	8.4	7.34	Mar. 26	6.0	5.31	Mar. 15	14.8	1.13	Mar. 4	23.6	26.95
Apr. 6	21.2	9.50	Apr. 24	18.7	7.46	Apr. 14	3.5	3.28	Apr. 3	12.3	29.10
May 6	9.9	11.65	May 24	7.4	9.62	May 13	16.2	5.43	May 3	1.1	1.25
June 4	22.6	13.80	June 22	20.2	11.77	June 12	5.0	7.58	June 1	13.8	3.40
July 4	11.4	15.95	July 22	8.9	13.92	July 11	17.7	9.73	July 1	2.5	5.55
Aug. 3	0.1	18.10	Aug. 20	21.6	16.07	Aug. 10	6.4	11.88	July 30	15.3	7.70
Sept. 1	12.8	20.25	Sept. 19	10.4	18.22	Sept. 8	19.2	14.04	Aug. 29	4.0	9.85
Oct. 1	1.6	22.40	Oct. 18	23.1	20.37	Oct. 8	7.9	16.19	Sept. 27	16.7	12.00
Oct. 30	14.3	24.55	Nov. 17	11.8	22.52	Nov. 6	20.6	18.34	Oct. 27	5.5	14.15
Nov. 29	3.0	26.70	Dec. 17	0.6	24.68	Dec. 6	9.4	20.49	Nov. 25	18.2	16.31
Dec. 18	15.8	28.86	—	—	—	—	—	—	Dec. 25	6.9	18.46

## Correction for other years

For years	Correction			For years	Correction			For years	Correction		
(Yrs. 1903-06 to 1947-50)				(Yrs. 1955-58 to 1999-02)				(Yrs. 2003-06 to 2047-50)			
1900	d	h	A	1900	d	h	A	2000	d	h	A
03-06	+20	8.67	+14.21	55-58	+15	12.71	+17.57	03-06	+24	16.78	+5.51
07-10	6	8.64	29.63	59-62	1	12.68	2.99	07-10	10	16.75	20.93
11-14	21	21.35	17.20	63-66	17	1.39	20.56	11-14	26	5.46	8.50
15-18	7	21.32	2.62	67-70	3	1.36	5.98	15-18	12	5.42	23.92
19-22	23	10.02	20.19	71-74	18	14.07	23.55	19-22	27	18.13	11.49
23-26	9	9.99	5.61	75-78	4	14.03	8.97	23-26	13	18.10	26.91
27-30	24	22.70	23.18	79-82	20	2.74	26.54	27-30	29	6.81	14.48
31-34	10	22.67	8.60	83-86	6	2.71	11.96	31-34	15	6.78	29.90
35-38	26	11.38	26.17	87-90	21	15.42	29.53	35-38	1	6.75	15.32
39-42	12	11.35	11.59	91-94	7	15.39	14.95	39-42	16	19.46	2.89
43-46	28	0.06	29.16	95-98	23	4.10	2.52	43-46	2	19.43	18.31
47-50	+14	0.03	+14.58	99-02	+9	4.07	+17.94	47-50	+18	8.14	+5.88

N.B.—Period of  $A$  is 30.

Note—For Full Moon add 14d 18.37h to the time of New Moon and 16.08 to the value of ' $A$ '.

## Correction for Centuries

For	+100 yrs.	d	h	A		d	h	A	
"	-100	"	+25	4.62	+21.29	or	-25	4.62	-10.85
"	-200	"	+20	20.50	+19.56	or	-8	8.12	-21.29
"	-300	"	+16	12.38	+28.27	or	-13	16.23	-12.59
"	-400	"	+12	2.27	+6.98	or	-18	0.35	-3.88
"	-500	"	+7	4.27	+15.68	or	-17	8.47	-25.18
"	-500	"	+7	20.15	+15.68	or	-21	16.58	-16.47

# ADVANCE EPHEMERIS

## Corrections to Time of New Moon and Full Moon

Correction according to A

A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.
	h		h		h		h		h
0.0	-0.00	6.0	-9.06	12.0	-6.12	18.0	+6.12	24.0	+9.06
0.5	0.94	6.5	9.39	12.5	5.23	18.5	6.93	24.5	8.63
1.0	1.88	7.0	9.62	13.0	4.27	19.0	7.65	25.0	8.12
1.5	2.80	7.5	9.76	13.5	3.25	19.5	8.27	25.5	7.54
2.0	3.70	8.0	9.78	14.0	2.19	20.0	8.79	26.0	6.88
2.5	4.55	8.5	9.70	14.5	-1.10	20.5	9.21	26.5	6.16
3.0	5.38	9.0	9.51	15.0	0.00	21.0	9.51	27.0	5.38
3.5	6.16	9.5	9.21	15.5	+1.10	21.5	9.70	27.5	4.55
4.0	6.88	10.0	8.79	16.0	2.19	22.0	9.78	28.0	3.70
4.5	7.54	10.5	8.27	16.5	3.25	22.5	9.76	28.5	2.80
5.0	8.12	11.0	7.65	17.0	4.27	23.0	9.62	29.0	1.88
5.5	8.63	11.5	6.93	17.5	5.23	23.5	9.39	29.5	0.94
6.0	-9.06	12.0	-6.12	18.0	+6.12	24.0	+9.06	30.0	+0.00

Correction according to Date

Date	Corr.	Date	Corr.	Date	Corr.	Date	Corr.
	h		h		h		h
Jan. 0	-0.25	Apr. 0	+4.14	July 9	-0.27	Oct. 7	-4.15
10	+0.47	10	4.12	19	0.96	17	4.07
20	1.19	20	3.98	29	1.62	27	3.87
30	1.87	May 0	3.72	Aug. 8	2.24	Nov. 6	3.55
Feb. 9	2.49	10	3.35	18	2.79	16	3.13
19	3.02	20	2.91	28	3.27	26	2.62
Mar. 1	3.47	30	2.37	Sept. 7	3.66	Dec. 6	2.02
11	3.82	June 9	1.76	17	3.93	16	1.35
21	4.04	19	1.10	27	4.10	26	-0.64
Apr. 0	4.14	29	+0.42	Oct. 7	4.15	36	+0.09
10	+4.12	July 9	-0.27	17	-4.07		

**Example :** Find the times of N. M., F. M., and the next N. M. occurring in April-May, 1972.

The basic year to be taken is 1952. The time of F. M. is obtained by adding the half-lunation to the preceding N. M.

	New Moon			Full Moon			New Moon		
	d	h	A	d	h	A	d	h	A
(P. 88) 1952 ... Mar.	26	6.00	5.31	Apr. 10	0.37	21.39	Apr. 24	18.70	7.46
Corr. for 1971-74	18	14.07	23.55		18	14.07	23.55	18	14.07
∴ In 1972 ... Apr.	13	20.07	28.86	Apr.	28	14.44	14.94	May 13	8.77
Corr. for A ...		+2.14			-0.13				-1.90
Corr. for date ...		+4.08			+3.78				+3.22
	Apr.	14	2.29	Apr.	28	18.09	May	13	10.09
(Ind. Eph.)		(14-2.02)			(28-18.23)			(13-9.63)	

If desired the following further correction may also be applied—

Sun - Rahu :	0° or 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°	180° 360°
Correction :	0	+0.22h	+0.22h	0	-0.22h	-0.22h	0

N.B.—The figures for the correction tables have been taken from LAHIRI'S *Panchanga Darpan*.

## ADVANCE EPHEMERIS

### Timing of Tithi of the Siddhantic Panchang

The timings of New Moon, Full Moon and other tithis of the old school Panchangs following Surya-Siddhanta calculations can also be obtained from the foregoing tables by applying some additional corrections as stated below :

First find the time of mean new-moon and the value of  $A$  for the month in question from page 88, and then apply the following corrections.

#### I. Correction to the mean values

Corrections for getting the result of original Surya-Siddhanta calculations are given below. The figures given within brackets under  $A$  are those of Grahalaḥaya and Siddhanta Rahasya ( of Bengal ) where some *Bija* corrections were applied in the Lunar anomaly.

Corr. to time	h	Corr. to $A$	Corr. to time	h	Corr. to $A$
2000 A.D.	-0'35	-0'49 (-0'35)	1700 A.D.	-0'29	-0'28 (-0'15)
1900 "	-0'33	-0'42 (-0'28)	1600 "	-0'26	-0'21 (-0'08)
1800 "	-0'31	-0'35 (-0'21)	1500 "	-0'24	-0'13 (-0'00)

A further correction to time, arising out of erroneous determination of *Desāntar* by the earlier observers, is necessary. The value of such correction for the old school Panchangs of Bengal ( which are now taken to relate to Calcutta ) is +0'19h.

The times of other tithis may also be obtained in the case of Siddhantic calculation by adding the following values to the N.M. or F.M.

Tithi	d	h	Time	$A$	Tithi	d	h	Time	$A$	Tithi	d	h	Time	$A$
1	0	23	63	1'07	6	5	21	75	6'43	11	10	19	87	11'79
2	1	23	25	2'14	7	6	21	37	7'50	12	11	19	49	12'86
3	2	22	87	3'22	8	7	21	00	8'57	13	12	19	12	13'93
4	3	22	50	4'29	9	8	20	02	9'65	14	13	18	74	15'00
5	4	22	12	5'36	10	9	20	24	10'72	15	14	18	37	16'08

#### II. Corrections to get the time of true tithi

To the time of mean tithi ( including new-moon and full moon ) thus obtained, the corrections according to the revised value of  $A$  and the revised date ( i.e. date increased by one for this purpose ) are to be applied from the tables on prepage. In addition the following further correction is to be taken ( being the full equation of time ).

Jan. 0	+0'05h	Apr. 0	+0'07h	July 0	+0'05h	Oct. 0	-0'16h
Feb. 0	+0'22	May 0	-0'05	Aug. 0	+0'11	Nov. 0	-0'27
Mar. 0	+0'21	June 0	-0'04	Sept. 0	+0'01	Dec. 0	-0'19

If desired the following further correction may also be taken  
for greater approach.

$A$	Corr.	$A$	$A$	Corr.	$A$	$A$	Corr.	$A$	$A$	Corr.	$A$
	h			h			h			h	
0	-00+	30	4	-08+	26	8	-14+	22	12	-20+	18
1	-02+	29	5	-09+	25	9	-17+	21	13	-15+	17
2	-04+	28	6	-10+	24	10	-20+	20	14	-10+	16
3	-06+	27	7	-12+	23	11	-21+	19	15	-00+	15

## ADVANCE EPHEMERIS

### Calculation of Siddhantic Tithi

#### EXAMPLE

Find the ending moments of Amavasya ( N. M. ) and tithis S 5 and S 8 of September 1971, according to the old school Bengali Panjika.

			New Moon		
			d	h	A
( P. 88 )	...	For 1951	Sept. 1	12:30	20:25
	Corr. for	1971-74	18	14:07	23:55
		1971	Sept. 20	2:87	13:80
( P. 90 )	Error for	1971		- 0:34	- 33
	Corr. for Desantar			+ 0:19	
			Sept. 20	2:72	13:47

For tithis 5 and 8 the mean values are obtained by adding figures for 5 and 8 tithis respectively ( p. 90 ) to the above figures for N. M.

Amavasya			Tithi S 5			Tithi S 8		
d h A			d h A			d h A		
Sept. 20	2:52	13:47	Sept. 25	0:84	13:83	Sept. 27	23:72	22:04
( P. 89 )	Corr. for A	- 3:31		+ 7:41			+ 9:78	
	.. for date (+ 1)	- 4:00		- 4:08			- 4:11	
( P. 90 )	Eqn. of time	- 0:11		- 0:13			0:14	
	Further for A	- 0:13		+ 0:21			+ 0:14	
Sept. 19	19:17 (I.S.T.)		Sept. 25	4:25 (I.S.T.)		Sept. 28	5:39 (I.S.T.)	
(Panjika)	(1883)			(4:06)			(5:50)	

NOTE : The ending moments of tithis of Siddhantic astronomy do not correspond to the actual moon, and as such they differ from those of modern astronomy by appreciable amounts rising up to six hours on either side ; the difference however becomes minimum near new moon and full moon. The Siddhantic calculations are given here to help examination of calendars of earlier years.

## SUNRISE AND SUNSET

The times of Sunrise and Sunset for any place can be calculated utilising the table of *Chara*, i.e. ascensional differences as given in LAHURI'S *Indian Ephemeris*. First find the declination of Sun and the apparent noon-time corresponding to the tropical longitude of Sun ( the declination and apparent noon time are almost the same every year corresponding to the tropical longitude ). Then find the duration of half-day ( i.e.,  $6h \pm \text{Chara}$  ) according to the latitude of place and the declination of Sun. Then —

Sunrise = Apprt. noon - half day ; Sunset = Apprt. noon + half day.

The times thus obtained are L. M. T. of place which may be reduced to the Standard Time by applying the necessary correction for reduction of time, if desired.

The Sunrise and Sunset times for a particular latitude ( when in L. M. T. ) or for any place ( in L. M. T. or in Standard Time ) are nearly the same on corresponding English dates at intervals of 4, 8, 12, and 16 years and again after 21, 25, 29, 33, 37, 41 and 45 years.

ADVANCE EPHEMERIS

MALAMASA and BEGINNING of MAGHA

The dates of beginning of the lunar month of Māgha (the new-moon between Jan 14 and Feb. 12) together with the intercalary or *mala-māsas* occurring in the period 1913 to 2026 A.D. are given below.

Year	Māgha begins	Malamāsa	Year	Māgha begins	Malamāsa	Year	Māgha begins	Malamāsa
1913	Feb. 6	—	1932	Feb. 6	—	1951	Feb. 6	—
1914	Jan. 26	—	1933	Jan. 25	—	1952	Jan. 26	—
1915	Jan. 15	Vaisakha	1934	Jan. 15	Vaisakha	1953	Jan. 15	Vaisakha
1916	Feb. 3	—	1935	Feb. 3	—	1954	Feb. 3	—
1917	Jan. 23	Asvina*	1936	Jan. 24	Bhadra	1955	Jan. 24	Bhadra
1918	Feb. 11	—	1937	Feb. 11	—	1956	Feb. 11	—
1919	Jan. 31	—	1938	Jan. 31	—	1957	Jan. 30	—
1920	Jan. 21	Sravana	1939	Jan. 20	Sravana	1958	Jan. 19	Sravana
1921	Feb. 7	—	1940	Feb. 8	—	1959	Feb. 7	—
1922	Jan. 28	—	1941	Jan. 27	—	1960	Jan. 28	—
1923	Jan. 17	Jyaishta	1942	Jan. 16	Jyaishta	1961	Jan. 16	Jyaishta
1924	Feb. 5	—	1943	Feb. 4	—	1962	Feb. 5	—
1925	Jan. 24	—	1944	Jan. 25	—	1963	Jan. 25	(A)
1926	Jan. 14	Chaitra	1945	Jan. 14	Chaitra	1964	Jan. 14	Chaitra
1927	Feb. 2	—	1946	Feb. 2	—	1965	Feb. 1	—
1928	Jan. 22	Sravana	1947	Jan. 22	Sravana	1966	Jan. 21	Sravana
1929	Feb. 9	—	1948	Feb. 10	—	1967	Feb. 9	—
1930	Jan. 29	—	1949	Jan. 29	—	1968	Jan. 29	—
1931	Jan. 18	Asadha	1950	Jan. 18	Asadha	1969	Jan. 18	Asadha
1970	Feb. 6	—	1989	Feb. 6	—	2008	Feb. 7	—
1971	Jan. 26	—	1990	Jan. 26	—	2009	Jan. 26	—
1972	Jan. 16	Vaisakha	1991	Jan. 15	Vaisakha	2010	Jan. 15	Vaisakha
1973	Feb. 3	—	1992	Feb. 3	—	2011	Feb. 3	—
1974	Jan. 23	Bhadra	1993	Jan. 22	Bhadra	2012	Jan. 23	Bhadra
1975	Feb. 11	—	1994	Feb. 10	—	2013	Feb. 10	—
1976	Jan. 31	—	1995	Jan. 30	—	2014	Jan. 30	—
1977	Jan. 19	Sravana**	1996	Jan. 20	Asadha	2015	Jan. 20	Asadha
1978	Feb. 7	—	1997	Feb. 7	—	2016	Feb. 8	—
1979	Jan. 28	—	1998	Jan. 28	—	2017	Jan. 28	—
1980	Jan. 17	Jyaishta	1999	Jan. 17	Jyaishta	2018	Jan. 17	Jyaishta
1981	Feb. 4	—	2000	Feb. 5	—	2019	Feb. 4	—
1982	Jan. 25	(B)	2001	Jan. 24	Asvina	2020	Jan. 24	Asvina
1983	Jan. 14	Phalgunā	2002	Feb. 12	—	2021	Feb. 11	—
1984	Feb. 1	—	2003	Feb. 1	—	2022	Feb. 1	—
1985	Jan. 21	Sravana	2004	Jan. 21	Sravana	2023	Jan. 21	Sravana
1986	Feb. 9	—	2005	Feb. 8	—	2024	Feb. 9	—
1987	Jan. 29	—	2006	Jan. 29	—	2025	Jan. 29	—
1988	Jan. 19	Jyaishta	2007	Jan. 19	Jyaishta	2026	Jan. 18	Jyaishta

\*Bhadra according to S. S.

\*\*Asadha according to S. S.

(A) Kartika (Asvina according to S. S.) and next Chaitra are *Mala* and intermediary Margasirsa (Pausa according to S. S.) is *Kshaya*. But here Chaitra is taken as real *Mala* and others are taken to cancel each other.

(B) Asvina and next Phalgunā are *Mala* and intermediary Magha is *Kshaya*. Here again Phalgunā is taken as real *Mala*.

NOTE: The 19-year cycle has been started from Sun's entry into Dhanistha nakshatra following the practice of Vedāṅga Jyotiṣa calendar.



## ADVANCE EPHEMERIS

### Beginning of different Lunar Months

The dates of new-moon marking the beginning of different lunar months (of mukhya māna) during the year can approximately be determined from the beginning date of Māgha given for the year.

The beginning date of Māgha is also related to the Malamasa occurring in the year in the following way :—

Māgha begins	Malamasa occurs
Jan. 14 ... ..	Phalgunā or Chaitra
Jan. 15—16 ... ..	Vaisakha
Jan. 16—17—18—19 ... ..	Jyāistha
Jan. 18—19—20 ... ..	Asādha
Jan. 19—20—21—22 ... ..	Sravana
Jan. 22—23—24 ... ..	Bhadra
Jan. 24—25 ... ..	Asvina
Jan. 25 to Feb. 12 ... ..	No malamasa

The beginning dates of other lunar months can easily be obtained from the following table when that for Māgha is known.

When a Malamasa occurs			When there is no Malamasa		
Māgha begins	Jan. 14 to Jan. 24		Māgha begins	Jan. 25 to Feb. 12	
— Phalgunat	Feb. 13 " Feb. 23		Phalgunā	Feb. 24 " Mar. 14	
Phalgunā* Chaitra †	Mar. 14 " Mar. 24		Chaitra	Mar. 25 " Apr. 12	
Chaitra* Vaisakha †	Apr. 13 " Apr. 23		Vaisakha	Apr. 24 " May 12	
Vaisakha* Jyāistha †	May 12 " May 22		Jyāistha	May 23 " June 10	
Jyāistha* Asādha †	June 11 " June 21		Asādha	June 22 " July 10	
Asādha* Sravana †	July 10 " July 20		Sravana	July 21 " Aug. 8	
Sravana* Bhadrā †	Aug. 9 " Aug. 19		Bhadrā	Aug. 20 " Sept. 7	
Bhadrā* —	Sept. 7 " Sept. 17		Asvina	Sept. 18 " Oct. 6	
Asvina	Oct. 7 " Oct. 17		Kārtika	Oct. 18 " Nov. 5	
Kārtika	Nov. 5 " Nov. 15		Mārga	Nov. 16 " Dec. 4	
Mārgasīrsa	Dec. 5 " Dec. 15		Pausa	Dec. 16 " Jan. 3	
Pausa	Jan. 3 " Jan. 13		Māgha	Jan. 14 " Feb. 1	
Māgha	Feb. 2 " Feb. 12				

\* When the period of intercalary month or Malamasa precedes.

† When the same follows i.e. occurs after this month.

N.B. (i) When a Malamasa occurs there are two months of the same name, the first one being prefixed by the term *mala* or *adhika* and second one considered as real or *suddha*. The month names stated above relate to the Suddha months.

(ii) The lunar months actually begin from Sukla Pratipad i.e. from the day next to the day of new-moon.

## ECLIPSES

When the date of an eclipse and the time of corresponding F. M. (for lunar) or N. M. (for solar) are known, then find the longitudes of Sun and Rahu and the value of Moon's Anomaly for the moment. Take 'Sun—Rahu' =  $K$  (in degrees) and reduce it into an acute angle by taking  $K, 180^\circ - K, K - 180^\circ$  or  $360^\circ - K$  as the case may be. Then—

Middle of eclipse = F. M. or N. M.  $\mp K$  (considered as min. of time). (Negative sign is to be taken when the original value of  $K$  is in the 1st or 3rd quadrant and positive sign for the 2nd or 4th quadrant).

## ADVANCE EPHEMERIS

For a *lunar eclipse* take the multiplier ( $=m$ ) according to the value of Lunar Anomaly and obtain  $K \times m$ .

Anomaly	0	3.8	7.5	11.2	15.0	18.8	22.5	26.2	30.0
$m$	.93	.96	1.00	1.04	1.07	1.04	1.00	.96	.93

Then the half-duration of the lunar eclipse is obtained from  $K m$ .

$K m$	...	0°	2°	4°	4° 8'	6°	8°	10°	10° 5'
Half partial (min.)	113	111	105	100	93	73	35	—	—
„ total (min.)	52	47	29	0	—	—	—	—	—

The half duration may be multiplied by  $m$  if greater accuracy is desired. Now apply the half duration to the middle time of the eclipse for obtaining the beginning and ending times.

For a *solar eclipse* the middle time for a particular place may approximately be obtained by applying further correction to the middle according to the L. M. T. of new-moon.

L. M. T. (Hour)	6-00	8-00	10-00	11-00	12-00	13-00	14-00	16-00	18-00
Corr. to middle (hr. min.)	-1.30	-1.37	-1.13	-0.42	0.00	+0.42	+1.13	+1.37	+1.30

In the case of a solar eclipse when the value of  $K$  is in the 1st or 2nd quadrant, *i. e.* when the latitude of Moon is North, then the eclipse is mainly visible in the northern hemisphere, particularly north of the ecliptic. When in the 3rd or 4th quadrant, then it is in the South.

(Greater details of eclipse calculation will be given in author's forthcoming book on eclipses.)

## SOLAR ECLIPSES

As visible at least from some part of the earth.

Suffixes : p=partial, r=annular, and t=total solar eclipse.  
rt=annular total.

Date	New Moon (I.S.T.)	Date	New Moon (I.S.T.)	Date	New Moon (I.S.T.)
	h m		h m		h m
1951 Mar. 7	26 22r	1960 Mar. 27	13 7p	1969 Mar. 18	10 22r
Sept. 1	18 20r	Sept. 20	28 43p	Sept. 11	25 26r
1952 Feb. 25	14 47t	1961 Feb. 15	13 41t	1970 Mar. 7	23 13t
Aug. 20	20 52r	Aug. 11	16 6r	Aug. 31	27 33r
1953 Feb. 14	6 41p	1962 Feb. 5	5 41t	1971 Feb. 25	15 19p
July 11	7 59p	July 31	17 54r	July 22	14 145p
Aug. 9	21 40p	1963 Jan. 25	19 13r	Aug. 20	28 24p
1954 Jan. 5	7 52r	July 20	26 13t	1972 Jan. 16	16 23r
June 30	17 57t	1964 Jan. 14	26 15p	July 10	25 10t
Dec. 25	13 4r	June 10	9 53p	1973 Jan. 4	21 13r
1955 June 20	9 42t	July 9	17 1p	June 30	17 9t
Dec. 14	12 38r	Dec. 4	6 49p	Dec. 24	20 38r
1956 June 8	27 0t	1965 May 30	26 44t	1974 June 20	10 26t
Dec. 2	13 43p	Nov. 23	9 41r	Dec. 13	21 56p
1957 Apr. 29	29 25r	1966 May 20	15 13rt	1975 May 11	12 36p
Oct. 23	10 14p	Nov. 12	19 57t	Nov. 3	18 35p
1958 Apr. 19	8 54r	1967 May 9	20 27p	1976 Apr. 29	15 50r
Oct. 12	26 22t	Nov. 2	11 18t	Oct. 23	10 40t
1959 Apr. 8	9 0r	1968 Mar. 28	28 18p	1977 Apr. 18	16 7r
Oct. 2	18 2t	Sept. 22	16 39t	Oct. 12	26 1t

# ADVANCE EPHEMERIS

## Solar Eclipses—contd.

Date	New Moon (L.S.T.)	Date	New Moon (L.S.T.)	Date	New Moon (L.S.T.)
	h m		h m		h m
1978 Apr. 7	20 46p	2003 May 31	9 50r	2028 July 22	8 32t
Oct. 2	11 11p	Nov. 23	28 29t	2029 Jan. 14	22 54p
1979 Feb. 26	22 17t	2004 Apr. 19	18 51p	June 12	9 21p
Aug. 22	22 41r	Oct. 14	8 18p	July 11	21 22p
1980 Feb. 16	14 22t	2005 Apr. 8	26 2rt	Dec. 5	20 22p
Aug. 10	24 41r	Oct. 3	15 55r	2030 June 1	11 51r
1981 Feb. 4	27 44r	2006 Mar. 29	15 46t	Nov. 25	12 16t
July 31	9 23t	Sept. 22	17 15r	2031 May 21	12 41r
1982 Jan. 25	10 27p	2007 Mar. 19	8 13p	Nov. 14	26 40rt
June 21	17 23p	Sept. 11	18 15p	2032 May 9	19 5r
July 20	24 26p	2008 Feb. 7	9 15r	Nov. 3	11 16p
1cc. 15	14 49p	Aug. 1	15 43t	2033 Mar. 30	23 22t
1983 June 11	10 18t	2009 Jan. 26	13 26r	Sept. 23	19 9p
1cc. 4	17 56r	July 12	8 4t	2034 Mar. 20	15 45t
1984 May 30	22 18rt	2-10 Jan. 15	12 42r	Sept. 12	21 43r
Nov. 22	28 28t	July 11	25 11t	2035 Mar. 9	28 39r
1985 May 19	27 12p	2011 Jan. 4	14 33p	Sept. 2	7 29t
Nov. 12	19 50t	June 1	26 32p	2036 Feb. 27	10 30p
1986 Apr. 9	11 39p	July 1	14 24t	July 23	15 47p
Oct. 3	24 25t	Nov. 25	11 40p	Aug. 21	23 4p
1987 Mar. 29	18 16rt	2012 May 20	19 17r	2037 Jan. 16	15 4p
Sept. 23	8 39r	Nov. 13	27 38t	July 13	8 2t
1988 Mar. 18	7 33t	2013 May 10	6 0r	2038 Jan. 5	19 11r
Sept. 11	10 20r	Nov. 3	18 20t	July 2	19 1r
1989 Mar. 7	23 49p	2014 Apr. 19	11 45r	Dec. 26	6 32t
Aug. 31	11 15p	Oct. 23	27 27p	2039 June 21	22 51r
1990 Jan. 26	24 51r	2015 Mar. 20	15 7t	Dec. 15	22 1t
July 22	8 24t	Sept. 13	12 12p	2040 May 11	8 57p
1991 Jan. 15	29 21r	2016 Mar. 9	7 25t	Nov. 4	24 26p
July 11	24 36t	Sept. 1	14 34r	2041 Apr. 30	17 16t
1992 Jan. 4	28 41r	2017 Feb. 26	20 29r	Oct. 25	6 59r
June 30	17 49t	Aug. 21	24 0t	2042 Apr. 20	7 49t
Dec. 24	6 13p	2018 Feb. 15	26 36p	Oct. 14	7 33r
1993 May 21	19 38p	July 13	8 19p	2043 Apr. 9	24 36t
Nov. 13	27 4p	Aug. 11	15 27p	Oct. 3	8 42r
1994 May 10	22 37r	2019 Jan. 6	6 58p	2044 Feb. 28	25 42r
Nov. 3	19 6t	July 2	24 46t	Aug. 23	6 35t
1995 Apr. 29	23 0r	Dec. 26	10 43r	2045 Feb. 16	29 20r
Oct. 24	10 5t	20-0 June 21	12 11r	Aug. 12	23 9t
1996 Apr. 17	28 19p	Dec. 14	21 46t	2046 Feb. 5	18 40r
Oct. 12	19 45p	2021 June 10	16 23r	Aug. 2	15 54t
1997 Mar. 9	6 46t	Dec. 4	13 12t	2047 Jan. 26	7 14p
Sept. 1	29 22p	2022 Apr. 30	25 57p	June 23	16 5p
1998 Feb. 26	22 57t	Oct. 25	16 19p	July 22	28 18p
Aug. 22	7 33r	2023 Apr. 20	9 42t	Dec. 16	29 8p
1999 Feb. 16	12 10r	Oct. 14	23 25r	2048 June 11	18 19r
Aug. 11	16 38t	2024 Apr. 8	23 51t	Dec. 5	20 59t
2000 Feb. 5	18 34p	Oct. 2	24 26r	2049 May 31	19 30r
July 1	24 51p	2025 Mar. 29	16 28p	Nov. 25	11 5rt
July 31	7 55p	Sept. 21	25 23p	2050 May 20	26 21rt
Dec. 25	22 52p	2026 Feb. 17	17 31r	Nov. 14	19 10p
2001 June 21	17 59t	Aug. 12	23 6t	2051 Apr. 11	7 29p
Dec. 14	26 18r	2027 Feb. 6	21 26r	Oct. 4	26 16p
2002 June 10	29 17r	Aug. 2	15 35t	—	—
Dec. 4	13 5t	2028 Jan. 26	20 42r	—	—

N.B.—Eclipses have been taken from *Canon of Eclipses* by OPPOLZER.

# ADVANCE EPHEMERIS

## LUNAR ECLIPSES

Suffix : t=total lunar eclipse. Other eclipses are only partial.

Date	Middle of eclps. (I.S.T.)	Date	Middle of eclps. (I.S.T.)	Date	Middle of eclps. (I.S.T.)
	h m		h m		h m
1952 Feb. 11	6 10	1986 Apr. 24	18 14t	2021 May 26	16 50t
Aug. 5	25 19	Oct. 17	24 49t	Nov. 19	14 33
1953 Jan. 29	29 20t	1987 Oct. 7	9 29	2022 May 16	9 41t
July 26	17 49t	1988 Aug. 27	16 36	Nov. 8	16 29t
1954 Jan. 19	8 4t	1989 Feb. 20	21 7t	2023 Oct. 28	25 44
July 16	5 22	Aug. 17	8 34t	2024 Sept. 18	8 17
1955 Nov. 29	22 36	1990 Feb. 9	24 42t	2025 Mar. 14	12 28t
1956 May 24	21 1	Aug. 6	19 37	Sept. 7	23 41t
Nov. 18	12 17t	1991 Dec. 21	16 4	2026 Mar. 3	17 6t
1957 May 13	28 2t	1992 June 15	10 27	Aug. 28	9 40
Nov. 7	19 58t	Dec. 9	29 13t	2028 Jan. 12	9 46
1958 May 3	17 41	1993 June 4	18 30t	July 6	23 50
1959 Mar. 24	25 47	Nov. 29	11 56t	Dec. 31	22 20t
1960 Mar. 13	14 0t	1994 May 25	8 58	2029 June 26	8 54t
Sept. 5	16 53t	1995 Apr. 15	17 47	Dec. 20	28 8t
1961 Mar. 2	19 2	1996 Apr. 4	5 39t	2030 June 15	24 5
Aug. 26	8 38t	Sept. 27	8 23t	2031 Apr. 25	20 41t
1963 July 6	27 30	1997 Mar. 24	10 11	Oct. 18	24 31t
Dec. 30	16 37t	Sept. 16	24 17t	2033 Apr. 14	24 42t
1964 June 25	6 37t	1999 July 28	17 6	Oct. 8	16 22t
Dec. 19	8 5t	2000 Jan. 21	10 14t	2034 Sept. 28	8 13
1965 June 14	7 21	July 16	19 25t	2035 Aug. 19	6 39
1967 Apr. 24	17 37t	2001 Jan. 9	25 51t	2036 Feb. 11	27 43t
Oct. 18	15 46t	July 5	20 28	Aug. 7	8 21t
1968 Apr. 13	10 19t	2003 Mar. 16	9 9t	2037 Jan. 31	19 32t
Oct. 6	17 11t	Nov. 9	6 48t	July 27	9 41
1970 Feb. 21	14 1	2004 May 4	26 0t	2039 June 6	24 21
Aug. 17	8 55	Oct. 28	8 34t	Nov. 30	22 24
1971 Feb. 10	13 13t	2005 Oct. 17	17 32	2040 May 26	17 13t
Aug. 6	25 14t	2006 Sept. 7	24 23	Nov. 18	24 31t
1972 Jan. 30	16 23t	2007 Mar. 3	28 51t	2041 May 16	6 14
July 26	12 48	Aug. 28	16 5t	Nov. 8	10 2
1973 Dec. 10	7 18	2008 Feb. 21	8 57t	2043 Mar. 25	20 1t
1974 June 4	27 44	Aug. 16	26 37	Sept. 19	7 24t
Nov. 29	20 46t	2009 Dec. 31	24 55	2044 Mar. 13	25 8t
1975 May 25	11 16t	2010 June 26	17 6	Sept. 7	16 52t
Nov. 18	27 54t	Dec. 21	13 46t	2045 Mar. 3	13 11
1976 May 13	25 20	2011 June 15	25 41t	2046 Jan. 22	18 34
1977 Apr. 4	9 51	Dec. 10	20 1t	July 18	6 31
1978 Mar. 24	21 55t	2012 June 4	16 33	2047 Jan. 12	6 53t
Sept. 16	24 33t	2013 Apr. 25	25 40	July 7	16 3t
1979 Mar. 13	26 40	2014 Apr. 15	13 18t	2048 Jan. 1	12 23t
Sept. 6	16 24t	Oct. 8	16 22t	June 26	7 27
1981 July 17	10 18	2015 Apr. 4	17 33t	2050 May 6	27 59t
1982 Jan. 9	25 26t	Sept. 28	8 17t	Oct. 30	8 49t
July 6	13 0t	2017 Aug. 7	23 48	2051 Apr. 26	7 45t
Dec. 30	16 56t	2018 Jan. 31	19 2t	Oct. 19	24 39t
1983 June 25	13 53	2019 July 27	25 53t	2052 Oct. 8	16 9
1985 May 4	25 27t	Jan. 21	10 43t	2054 Feb. 22	12 20t
Oct. 28	23 13t	July 16	27 2	Aug. 8	14 50t

# ADVANCE EPHEMERIS

## SAVANA CALENDAR

Kaliyuga Savana years, months and days.

Year	Jan. 0			Mar. 0			June 0			Sept. 0			Dec. 0		
A.D.	y	m	d	y	m	d	y	m	d	y	m	d	y	m	d
1900	5073	9	5	73	11	4	74	2	6	74	5	8	74	m	9
01	5074	9	10	74	11	9	75	2	11	75	5	13	75	8	14
02	5075	9	15	75	11	14	76	2	16	76	5	18	76	8	19
03	5076	9	20	76	11	19	77	2	21	77	5	23	77	8	24
04	5077	9	25	77	11	25	78	2	27	78	5	29	78	9	0
05	5078	10	1	79	0	0	79	3	2	79	6	4	79	9	5
06	5079	10	6	80	0	5	80	3	7	80	6	9	80	9	10
07	5080	10	11	81	0	10	81	3	12	81	6	14	81	9	15
08	5081	10	16	82	0	16	82	3	18	82	6	20	82	9	21
09	5082	10	22	83	0	21	83	3	23	83	6	25	83	9	26
1910	5083	10	27	84	0	26	84	3	28	84	7	0	84	10	1
11	5084	11	2	85	1	1	85	4	3	85	7	5	85	10	6
12	5085	11	7	86	1	7	86	4	9	86	7	11	86	10	12
13	5086	11	13	87	1	12	87	4	14	87	7	16	87	10	17
14	5087	11	18	88	1	17	88	4	19	88	7	21	88	10	22
15	5088	11	23	89	1	22	89	4	24	89	7	26	89	10	27
16	5089	11	28	90	1	28	90	5	0	90	8	2	90	11	3
17	5091	0	4	91	2	3	91	5	5	91	8	7	91	11	8
18	5092	0	9	92	2	8	92	5	10	92	8	12	92	11	13
19	5093	0	14	93	2	13	93	5	15	93	8	17	93	11	18
1920	5094	0	19	94	2	19	94	5	21	94	8	23	94	11	24
21	5095	0	25	95	2	24	95	5	26	95	8	28	95	11	29
22	5096	1	0	96	2	29	96	6	1	96	9	3	97	0	4
23	5097	1	5	97	3	4	97	6	6	97	9	8	98	0	9
24	5098	1	10	98	3	10	98	6	12	98	9	14	99	0	15
25	5099	1	16	99	3	15	99	6	17	99	9	19	00	0	20
26	5100	1	21	00	3	20	00	6	22	00	9	24	01	0	25
27	5101	1	26	01	3	25	01	6	27	01	9	29	02	1	0
28	5102	2	1	02	4	1	02	7	3	02	10	5	03	1	6
29	5103	2	7	03	4	6	03	7	8	03	10	10	04	1	11
1930	5104	2	12	04	4	11	04	7	13	04	10	15	05	1	16
31	5105	2	17	05	4	16	05	7	18	05	10	20	06	1	21
32	5106	2	22	06	4	22	06	7	24	06	10	26	07	1	27
33	5107	2	28	07	4	27	07	7	29	07	11	1	08	2	2
34	5108	3	3	08	5	2	08	8	4	08	11	6	09	2	7
35	5109	3	8	09	5	7	09	8	9	09	11	11	10	2	12
36	5110	3	13	10	5	13	10	8	15	10	11	17	11	2	18
37	5111	3	19	11	5	18	11	8	20	11	11	22	12	2	23
38	5112	3	24	12	5	23	12	8	25	12	11	27	13	2	28
39	5113	3	29	13	5	28	13	9	0	14	0	2	14	3	3
1940	5114	4	4	14	6	4	14	9	6	15	0	8	15	3	9
41	5115	4	10	15	6	9	15	9	11	16	0	13	16	3	14
42	5116	4	15	16	6	14	16	9	16	17	0	18	17	5	19
43	5117	4	20	17	6	19	17	9	21	18	0	23	18	3	24
44	5118	4	25	18	6	25	18	9	27	19	0	29	19	4	0
45	5119	5	1	19	7	0	19	10	2	20	1	4	20	4	5
46	5120	5	6	20	7	5	20	10	7	21	1	9	21	4	10
47	5121	5	11	21	7	10	21	10	12	22	1	14	22	4	15
48	5122	5	16	22	7	16	22	10	18	23	1	20	23	4	21
1949	5123	5	22	23	7	21	23	10	23	24	1	25	24	4	26

N.B.—The months of this calendar are of 30 days each and the year is of 360 days. The days are the Kali elapsed days at 24h (midnight) of the date.

# ADVANCE EPHEMERIS

## SAVANA CALENDAR

Kaliyuga Savana years, months and days—*contd.*

Year	Jan. 0			Mar. 0			June 0			Sept. 0			Dec. 0		
A.D.	y	m	d	y	m	d	y	m	d	y	m	d	y	m	d
1950	5124	5	27	24	7	26	24	10	28	25	2	0	25	5	1
51	5125	6	2	25	8	1	25	11	3	26	2	5	26	5	6
52	5126	6	7	26	8	7	26	11	9	27	2	11	27	5	12
53	5127	6	13	27	8	12	27	11	14	28	2	16	28	5	17
54	5128	6	18	28	8	17	28	11	19	29	2	21	29	5	22
55	5129	6	23	29	8	22	29	11	24	30	2	26	30	5	27
56	5130	6	28	30	8	28	31	0	0	31	3	2	31	6	3
57	5131	7	4	31	9	3	32	0	5	32	3	7	32	6	8
58	5132	7	9	32	9	8	33	0	10	33	3	12	33	6	13
59	5133	7	14	33	9	13	34	0	15	34	3	17	34	6	18
1960	5134	7	19	34	9	19	35	0	21	35	3	23	35	6	24
61	5135	7	25	35	9	24	36	0	26	36	3	28	36	6	29
62	5136	8	0	36	9	29	37	1	1	37	4	3	37	7	4
63	5137	8	5	37	10	4	38	1	6	38	4	8	38	7	9
64	5138	8	10	38	10	10	39	1	12	39	4	14	39	7	15
65	5139	8	16	39	10	15	40	1	17	40	4	19	40	7	20
66	5140	8	21	40	10	20	41	1	22	41	4	24	41	7	25
67	5141	8	26	41	10	25	42	1	27	42	4	29	42	8	0
68	5142	9	1	42	11	1	43	2	3	43	5	5	43	8	6
69	5143	9	7	43	11	6	44	2	8	44	5	10	44	8	11
1970	5144	9	12	44	11	11	45	2	13	45	5	15	45	8	16
71	5145	9	17	45	11	16	46	2	18	46	5	20	46	8	21
72	5146	9	22	46	11	22	47	2	24	47	5	26	47	8	27
73	5147	9	28	47	11	27	48	2	29	48	6	1	48	9	2
74	5148	10	3	49	0	2	49	3	4	49	6	6	49	9	7
75	5149	10	8	50	0	7	50	3	9	50	6	11	50	9	12
76	5150	10	13	51	0	13	51	3	15	51	6	17	51	9	18
77	5151	10	19	52	0	18	52	3	20	52	6	22	52	9	23
78	5152	10	24	53	0	23	53	3	25	53	6	27	53	9	28
79	5153	10	29	54	0	28	54	4	0	54	7	2	54	10	3
1980	5154	11	4	55	1	4	55	4	6	55	7	8	55	10	9
81	5155	11	10	56	1	9	56	4	11	56	7	13	56	10	14
82	5156	11	15	57	1	14	57	4	16	57	7	18	57	10	19
83	5157	11	20	58	1	19	58	4	21	58	7	23	58	10	24
84	5158	11	25	59	1	25	59	4	27	59	7	29	59	11	0
85	5160	0	1	60	2	0	60	5	2	60	8	4	60	11	5
86	5161	0	6	61	2	5	61	5	7	61	8	9	61	11	10
87	5162	0	11	62	2	10	62	5	12	62	8	14	62	11	15
88	5163	0	16	63	2	16	63	5	18	63	8	20	63	11	21
89	5164	0	22	64	2	21	64	5	23	64	8	25	64	11	26
1990	5165	0	27	65	2	26	65	5	28	65	9	0	66	0	1
91	5166	1	2	66	3	1	66	6	3	66	9	5	67	0	6
92	5167	1	7	67	3	7	67	6	9	67	9	11	68	0	12
93	5168	1	13	68	3	12	68	6	14	68	9	16	69	0	17
94	5169	1	18	69	3	17	69	6	19	69	9	21	70	0	22
95	5170	1	23	70	3	22	70	6	24	70	9	26	71	0	27
96	5171	1	28	71	3	28	71	7	0	71	10	2	72	1	3
97	5172	2	4	72	4	3	72	7	5	72	10	7	73	1	8
98	5173	2	9	73	4	8	73	7	10	73	10	12	74	1	13
1999	5174	2	14	74	4	13	74	7	15	74	10	17	75	1	18

N.B.—The months of this calendar are of 30 days each and the year is of 360 days. The days are the Kali elapsed days at 24h (midnight) of the date.

ADVANCE EPHIMERIS

SAVANA CALENDAR

Kaliyuga Savana years, months and days—*cond.*

Year	Jan. 0			Mar. 0			June 0			Sept. 0			Dec. 0		
A.D.	y	m	d	y	m	d	y	m	d	y	m	d	y	m	d
2000	5175	2	19	75	4	19	75	7	21	75	10	23	78	1	24
01	5176	2	25	76	4	24	76	7	26	76	10	28	77	1	29
02	5177	3	0	77	4	29	77	8	1	77	11	3	78	2	4
03	5178	3	5	78	5	4	78	8	6	78	11	8	79	2	9
04	5179	3	10	79	5	10	79	8	12	79	11	14	80	2	15
05	5180	3	16	80	5	15	80	8	17	80	11	19	81	2	20
06	5181	3	21	81	5	20	81	8	23	81	11	24	82	2	25
07	5182	3	26	82	5	25	82	8	27	82	11	29	83	3	0
08	5183	4	1	83	6	1	83	9	3	84	0	5	84	3	6
09	5184	4	7	84	6	6	84	9	8	85	0	10	85	3	11
2010	5185	4	12	85	6	11	85	9	13	86	0	15	86	3	16
11	5186	4	17	86	6	16	86	9	18	87	0	20	87	3	21
12	5187	4	22	87	6	22	87	9	24	88	0	26	88	3	27
13	5188	4	28	88	6	27	88	9	29	89	1	1	89	4	2
14	5189	5	3	89	7	2	89	10	4	90	1	6	90	4	7
15	5190	5	8	90	7	7	90	10	9	91	1	11	91	4	12
16	5191	5	13	91	7	13	91	10	15	92	1	17	92	4	18
17	5192	5	19	92	7	18	92	10	20	93	1	22	93	4	23
18	5193	5	24	93	7	23	93	10	25	94	1	27	94	4	28
19	5194	5	29	94	7	28	94	11	0	95	2	2	95	5	3
2020	5195	6	4	95	8	4	95	11	6	96	2	8	96	5	9
21	5196	6	10	96	8	9	96	11	11	97	2	13	97	5	14
22	5197	6	15	97	8	14	97	11	16	98	2	18	98	5	19
23	5198	6	20	98	8	19	98	11	21	99	2	23	99	5	24
24	5199	6	25	99	8	25	99	11	27	00	2	29	00	6	0
25	5200	7	1	00	9	0	01	0	2	01	3	4	01	6	5
26	5201	7	6	01	9	5	02	0	7	02	3	9	02	6	10
27	5202	7	11	02	9	10	03	0	12	03	3	14	03	6	15
28	5203	7	16	03	9	16	04	0	18	04	3	20	04	6	21
29	5204	7	22	04	9	21	05	0	23	05	3	25	05	6	26
2030	5205	7	27	05	9	26	06	0	28	06	4	0	06	7	1
31	5206	8	2	06	10	1	07	1	3	07	4	5	07	7	6
32	5207	8	7	07	10	7	08	1	9	08	4	11	08	7	12
33	5208	8	13	08	10	12	09	1	14	09	4	16	09	7	17
34	5209	8	18	09	10	17	10	1	19	10	4	21	10	7	22
35	5210	8	23	10	10	22	11	1	24	11	4	26	11	7	27
36	5211	8	28	11	10	28	12	2	0	12	5	2	12	8	3
37	5212	9	4	12	11	3	13	2	5	13	5	7	13	8	8
38	5213	9	9	13	11	8	14	2	10	14	5	12	14	8	13
39	5214	9	14	14	11	13	15	2	15	15	5	17	15	8	18
2040	5215	9	19	15	11	19	16	2	21	16	5	23	16	8	24
41	5216	9	25	16	11	24	17	2	26	17	5	28	17	8	29
42	5217	10	0	17	11	29	18	3	1	18	6	3	18	9	4
43	5218	10	5	19	0	4	19	3	6	19	6	8	19	9	9
44	5219	10	10	20	0	10	20	3	12	20	6	14	20	9	15
45	5220	10	16	21	0	15	21	3	17	21	6	19	21	9	20
46	5221	10	21	22	0	20	22	3	22	22	6	24	22	9	25
47	5222	10	26	23	0	25	23	3	27	23	6	29	23	10	0
48	5223	11	1	24	1	1	24	4	3	24	7	5	24	10	6
2049	5224	11	7	25	1	6	25	4	8	25	7	10	25	10	11

N.B.—3102 B.C. Feb. 17-18, Thurs.-Friday midnight (Ujjain) is the zero date of the series and Feb. 18 is the 1st day.

ADVANCE EPHEMERIS

SIDEREAL TIME

Table I

Sidereal Time at 12h noon local mean time for days of year  
( For 82½° E. Longitude and for 1900 A.D. )

Date	Sid. time	Date	Sid. time	Date	Sid. time	Date	Sid. time	Date	Sid. time
JAN.		FEB.		APRIL		MAY		JULY	
	<i>h m s</i>		<i>h m s</i>		<i>h m s</i>		<i>h m s</i>		<i>h m s</i>
1	18 41 48	16	21 43 10	1	0 36 39	17	3 38 0	1	6 35 25
2	18 45 45	17	21 47 7	2	0 40 35	18	3 41 56	2	6 39 22
3	18 49 42	18	21 51 3	3	0 44 32	19	3 45 53	3	6 43 18
4	18 53 38	19	21 55 0	4	0 48 23	20	3 49 50	4	6 47 15
5	18 57 35	20	21 58 56	5	0 52 25	21	3 53 46	5	6 51 11
6	19 1 31	21	22 2 53	6	0 56 21	22	3 57 43	6	6 55 8
7	19 5 28	22	22 6 49	7	1 0 13	23	4 1 39	7	6 59 4
8	19 9 24	23	22 10 46	8	1 4 14	24	4 5 36	8	7 3 1
9	19 13 21	24	22 14 43	9	1 8 11	25	4 9 33	9	7 6 56
10	19 17 18	25	22 18 39	10	1 12 8	26	4 13 29	10	7 10 54
11	19 21 14	26	22 22 36	11	1 16 4	27	4 17 26	11	7 14 51
12	19 25 11	27	22 26 32	12	1 20 1	28	4 21 22	12	7 18 47
13	19 29 7	28	22 30 29	13	1 23 57	29	4 25 19	13	7 22 44
14	19 33 4	29	22 34 25	14	1 27 54	30	4 29 15	14	7 26 40
15	19 37 0			15	1 31 50	31	4 33 12	15	7 30 37
16	19 40 57			16	1 35 47			16	7 34 33
17	19 44 53	MAR.		17	1 39 43			17	7 38 30
18	19 48 50			18	1 43 40	JUNE		18	7 42 27
19	19 52 47	1	22 34 25	19	1 47 37	1	4 37 8	19	7 46 23
20	19 56 43	2	22 38 22	20	1 51 33	2	4 41 5	20	7 50 20
21	20 0 40	3	22 42 18	21	1 55 30	3	4 45 2	21	7 54 16
22	20 4 36	4	22 46 15	22	1 59 26	4	4 48 58	22	7 58 13
23	20 8 33	5	22 50 12	23	2 3 23	5	4 52 55	23	8 2 9
24	20 12 29	6	22 54 8	24	2 7 19	6	4 56 51	24	8 6 6
25	20 16 26	7	22 58 5	25	2 11 16	7	5 0 48	25	8 10 2
26	20 20 22	8	23 2 1	26	2 15 12	8	5 4 44	26	8 13 59
27	20 24 19	9	23 5 58	27	2 19 9	9	5 8 41	27	8 17 56
28	20 28 16	10	23 9 54	28	2 23 6	10	5 12 37	28	8 21 52
29	20 32 12	11	23 13 51	29	2 27 2	11	5 16 34	29	8 25 49
30	20 36 9	12	23 17 47	30	2 30 59	12	5 20 31	30	8 29 45
31	20 40 5	13	23 21 44			13	5 24 27	31	8 33 42
		14	23 25 41	MAY		14	5 28 24		
		15	23 29 37			15	5 32 20		
		16	23 33 34	1	2 34 55	16	5 36 17	1	8 37 38
1	20 44 2	17	23 37 30	2	2 38 52	17	5 40 13	2	8 41 35
2	20 47 58	18	23 41 27	3	2 42 48	18	5 44 10	3	8 45 31
3	20 51 55	19	23 45 23	4	2 46 45	19	5 48 6	4	8 49 28
4	20 55 51	20	23 49 20	5	2 50 41	20	5 52 3	5	8 53 25
5	20 59 48	21	23 53 16	6	2 54 38	21	5 56 0	6	8 57 21
6	21 3 45	22	23 57 13	7	2 58 35	22	5 59 56	7	9 1 18
7	21 7 41	23	0 1 10	8	3 2 31	23	6 3 53	8	9 5 14
8	21 11 38	24	0 5 6	9	3 6 28	24	6 7 49	9	9 9 11
9	21 15 34	25	0 9 3	10	3 10 24	25	6 11 46	10	9 13 7
10	21 19 31	26	0 12 59	11	3 14 21	26	6 15 42	11	9 17 4
11	21 23 27	27	0 16 56	12	3 18 17	27	6 19 39	12	9 21 0
12	21 27 24	28	0 20 52	13	3 22 14	28	6 23 35	13	9 24 57
13	21 31 20	29	0 24 49	14	3 26 10	29	6 27 32	14	9 28 54
14	21 35 17	30	0 28 45	15	3 30 7	30	6 31 29	15	9 32 50
15	21 39 14	31	0 32 42	16	3 34 4	31			



# ADVANCE EPHEMERIS

## Sidereal Time

Table I—*contd.*

Date	Sid. time	Date	Sid. time	Date	Sid. time	Date	Sid. time	Date	Sid. time
	AUGUST		SEPT.		OCT.		NOV.		DEC.
	<i>h m s</i>		<i>h m s</i>		<i>h m s</i>		<i>h m s</i>		<i>h m s</i>
16	9 36 47	12	11 23 14	9	13 9 41	5	14 56 8	2	16 42 35
17	9 40 43	13	11 27 10	10	13 13 37	6	15 0 4	3	16 46 31
18	9 44 40	14	11 31 7	11	13 17 34	7	15 4 1	4	16 50 28
19	9 48 36	15	11 35 3	12	13 21 30	8	15 7 57	5	16 54 24
20	9 52 33	16	11 39 0	13	13 25 27	9	15 11 54	6	16 58 21
21	9 56 29	17	11 42 56	14	13 29 23	10	15 15 50	7	17 2 17
22	10 0 26	18	11 46 53	15	13 33 20	11	15 19 47	8	17 6 14
23	10 4 23	19	11 50 50	16	13 37 16	12	15 23 43	9	17 10 10
24	10 8 19	20	11 54 46	17	13 41 13	13	15 27 40	10	17 14 7
25	10 12 16	21	11 58 43	18	13 45 10	14	15 31 37	11	17 18 4
26	10 16 12	22	12 2 39	19	13 49 6	15	15 35 33	12	17 22 0
27	10 20 9	23	12 6 36	20	13 53 3	16	15 39 30	13	17 25 57
28	10 24 5	24	12 10 32	21	13 56 59	17	15 43 26	14	17 29 53
29	10 28 2	25	12 14 29	22	14 0 56	18	15 47 23	15	17 33 50
30	10 31 58	26	12 18 25	23	14 4 52	19	15 51 19	16	17 37 46
31	10 35 55	27	12 22 22	24	14 8 49	20	15 55 16	17	17 41 43
	SEPT.	28	12 26 19	25	14 12 45	21	15 59 12	18	17 45 39
		29	12 30 15	26	14 16 42	22	16 3 9	19	17 49 36
		30	12 34 12	27	14 20 39	23	16 7 6	20	17 53 33
1	10 39 52		OCT.	28	14 24 35	24	16 11 2	21	17 57 29
2	10 43 48			29	14 28 32	25	16 14 59	22	18 1 26
3	10 47 45			30	14 32 28	26	16 18 55	23	18 5 22
4	10 51 41	1	12 38 8	31	14 36 25	27	16 22 52	24	18 9 19
5	10 55 38	2	12 42 5		NOV.	28	16 26 48	25	18 13 15
6	10 59 34	3	12 46 1			29	16 30 45	26	18 17 12
7	11 3 31	4	12 49 58			30	16 34 41	27	18 21 8
8	11 7 27	5	12 53 54	1	14 40 21		DEC.	28	18 25 5
9	11 11 24	6	12 57 51	2	14 44 18			29	18 29 2
10	11 15 21	7	13 1 48	3	14 48 14			30	18 32 58
11	11 19 17	8	13 5 44	4	14 52 11	1	16 38 38	31	18 36 55

## RULE

The Sidereal Time for 12<sup>h</sup> noon Local Mean Time for the place is obtained by adding figures from Tables I, II and II(a). The given time of the day is first to be converted into L. M. T. of the place and then the time-interval from 12<sup>h</sup> noon L. M. T. is to be obtained. This time-interval increased by the addition of 10 secs. per hour or 0<sup>m</sup> 59<sup>s</sup> for every 6 hours is to be added to or subtracted from the sidereal time for 12 noon according as the given moment is after or before the noon time. The result is the sidereal time for the moment.

# ADVANCE EPHEMERIS

## SIDEREAL TIME

Table II—Correction for different years

Year	Correc- tion	Year	Correc- tion	Year	Correc- tion	Year	Correc- tion	Year	Correc- tion
	m s		m s		m s		m s		m s
1900	0 0	1931	-2 1	1961	+0 63	1992§	-1 7	2022	+1 47
1901	-0 57	1932§	-2 58	1962	-0 4	1992†	+2 50	2023	+0 49
1902	-1 55	1932†	+0 59	1963	-1 2	1993	+1 52	2024§	-0 8
1903	-2 52	1933	+0 1	1964§	-1 59	1994	+0 55	2024†	+3 49
1904§	-3 49	1934	-0 56	1964†	+1 58	1995	-0 3	2025	+2 52
1904†	+0 7	1935	-1 53	1965	+1 0	1996§	-1 0	2026	+1 55
1905	-0 50	1936§	-2 50	1966	+0 3	1996†	+2 57	2027	+0 57
1906	-1 48	1936†	+1 6	1967	-0 54	1997	+1 59	2028§	0 0
1907	-2 45	1937	+0 9	1968§	-1 51	1998	+1 2	2028†	+3 56
1908§	-3 42	1938	-0 49	1968†	+2 5	1999	+0 5	2029	+2 59
1908†	+0 14	1939	-1 46	1969	+1 8	2000§	-0 52	2030	+2 2
1909	-0 43	1940§	-2 43	1970	+0 10	2000†	+3 5	2031	+1 4
1910	-1 40	1940†	+1 13	1971	-0 47	2001	+2 7	2032§	+0 7
1911	-2 38	1941	+0 16	1972§	-1 44	2002	+1 10	2032†	+4 4
1912§	-3 35	1942	-0 41	1972†	+2 13	2003	+0 13	2033	+3 7
1912†	+0 22	1943	-1 38	1973	+1 15	2004§	-0 45	2034	+2 10
1913	-0 36	1944§	-2 36	1974	+0 18	2004†	+3 12	2035	+1 12
1914	-1 3†	1944†	+1 21	1975	-0 39	2005	+2 15	2036§	+0 15
1915	-2 30	1945	+0 24	1976§	-1 36	2006	+1 18	2036†	+4 11
1916§	-3 27	1946	-0 34	1976†	+2 20	2007	+0 21	2037	+3 14
1916†	+0 29	1947	-1 31	1977	+1 23	2008§	-0 37	2038	+2 17
1917	-0 28	1948§	-2 28	1978	+0 25	2008†	+3 19	2039	+1 19
1918	-1 25	1948†	+1 28	1979	-0 32	2009	+2 22	2040§	+0 22
1919	-2 23	1949	+0 31	1980§	-1 29	2010	+1 25	2040†	+4 18
1920§	-3 20	1950	-0 26	1980†	+2 28	2011	+0 28	2041	+3 21
1920†	+0 37	1951	-1 24	1981	+1 30	2012§	-0 30	2042	+2 24
1921	-0 21	1952§	-2 21	1982	+0 33	2012†	+3 27	2043	+1 26
1922	-1 18	1952†	+1 36	1983	-0 25	2013	+2 30	2044§	+0 29
1923	-2 15	1953	+0 38	1984§	-1 22	2014	+1 33	2044†	+4 26
1924§	-3 12	1954	-0 19	1984†	+2 35	2015	+0 35	2045	+3 29
1924†	+0 44	1955	-1 16	1985	+1 37	2016§	-0 22	2046	+2 32
1925	-0 13	1956§	-2 13	1986	+0 40	2016†	+3 34	2047	+1 34
1926	-1 11	1956†	+1 43	1987	-0 17	2017	+2 37	2048§	+0 37
1927	-2 8	1957	+0 46	1988§	-1 14	2018	+1 40	2048†	+4 33
1928§	-3 5	1958	-0 12	1988†	+2 42	2019	+0 42	2049	+3 36
1928†	+0 51	1959	-1 9	1989	+1 45	2020§	-0 15	2050	+2 39
1929	-0 6	1960§	-2 6	1990	+0 47	2020†	+3 41	2051	+1 41
1930	-1 3	1960†	+1 51	1991	-0 10	2021	+2 44	—	—

§ For January and February only.

† For March to December.

Table II (a)—Correction for other centuries

Corrections to be applied to the Sidereal Time of any date of the years from 1901 to 2050 to get the Sidereal Time for the same date of the Standard Calendar of earlier centuries are given below.

Correction for:—100 yrs. = -3m 5s; -200 yrs. = -6m 9s

-300 yrs. = -9m 14s; -400 yrs. = -12m 18s; -500 yrs. = -15m 23s.

# ADVANCE EPHEMERIS

## NIRAYANA LAGNA or ASCENDANT

According to the Sidereal Time in hours and minutes

Lagna (Ascendant)		LATITUDE									
		0°	10°	20°	30°	40°	50°	60°	66°33'	70°	
		h m	h m	h m	h m	h m	h m	h m	h m	h m	
Mesha	0°	19 27	19 20	19 13	19 05	18 56	18 43	18 22	18 00	17 42	
Vrisha	0°	21 24	21 10	20 56	20 39	20 18	19 49	19 01	18 00	16 53	
Mithuna	0°	23 31	23 14	22 55	22 34	22 07	21 28	20 19	18 00	15 48 (a)	
Mith.	6° 35'	24 00	23 42	23 24	23 02	22 35	21 56	20 45	18 00	—	
Karkata	0°	1 41	1 25	1 08	0 49	0 24	23 49	22 50	21 22	20 12 (b)	
Simha	0°	3 43	3 33	3 23	3 10	2 56	2 35	2 03	1 26	0 54	
Kanya	0°	5 36	5 34	5 32	5 30	5 27	5 23	5 17	5 11	5 1	
Kanya	6° 35'	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	6 00	
Tula	0°	7 27	7 33	7 40	7 48	7 57	8 10	8 31	8 53	9 11	
Vrischika	0°	9 24	9 38	9 52	10 09	10 30	10 59	11 47	12 48	13 55	
Dhanus	0°	11 31	11 49	12 07	12 29	12 56	13 35	14 44	17 03	15 48 (c)	
Dhan.	6° 35'	12 00	12 18	12 36	12 58	13 25	14 04	15 15	18 00	—	
Makara	0°	13 41	13 57	14 14	14 33	14 58	15 32	16 32	18 00	20 12 (d)	
Kumtha	0°	15 43	15 53	16 03	16 15	16 30	16 51	17 23	18 00	18 31	
Mina	0°	17 36	17 38	17 40	17 42	17 45	17 48	17 51	18 00	18 11	
Mina	6° 35'	18 00	18 00	18 00	18 00	18 00	18 00	18 00	18 00	18 00	
Mesha	0°	19 27	19 20	19 13	19 05	18 56	18 43	18 22	18 00	17 42	

Note : For 70° latitude (a) = The given Sidereal Time relates to Vrisha 5° 50',  
(b) = Karkata 7° 20', (c) = Vrischika 5° 50' and (d) Makara 7° 20'.

From the point (b) to (c) the Lagna increases with increase of Sidereal time as usual, but from (d) to (a) it decreases with the increase of S.T.

The portions of the zodiac from the point (a) to (b) and again from (c) to (d) never become Lagna for 70°N. latitude, as the former portion is always above the horizon and the latter always below it at that latitude.

Rule: (1) The Lagna obtained from the above two tables is Nirayana. To derive tropical or Sayana Lagna add 23° 25' to the above degree of Lagna.

(2) The latitudes given above are northern latitudes. For places in southern latitude first add 12h to the S. T. for the moment and find the Lagna according to this sidereal time. Then add 6 (six) signs or rāsis to the sign of the Lagna so obtained.

## Correction for years

The following correction is to be applied to the degree of Ascendant for different years.

1500	+6 32'	1700	+3 44'	1900	+57'	1980	-10'	2020	-43'
1550	+5 50'	1750	+3 2'	1950	+15'	1990	-18'	2030	-52'
1600	+5 8'	1800	+2 21'	1960	+7'	2000	-26'	2040	-60'
1650	+4 28'	1850	+1 39'	1970	-1'	2010	-35'	2050	-68'

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## TITHI, NAKSHATRA AND YOGA

When the *nirayana* true longitudes of the Sun and Moon are known, then the *tithi*, *nakshatra* and *yoga* for that time can be determined in the following way.

For Tithi find Moon *minus* Sun.

For Nakshatra take Moon only.

For Yoga find Moon *plus* Sun.

**Tithi**—The longitude difference 'Moon—Sun' in signs, degrees and minutes gives the *Tithi* for the moment as shown in the table below.

Diff.	Tithi	Diff.	Tithi	Diff.	Tithi	Diff.	Tithi	Diff.	Tithi
0 12 S 1	2 24 S 7	5 6 S 13	7 18 K 4	10 0 K 10					
0 24 2	3 6 8	5 18 14	8 0 5	10 12 11					
1 6 3	3 18 9	6 0 S 15	8 12 6	10 24 12					
1 18 4	4 0 10	6 12 K 1	8 24 7	11 6 13					
2 0 5	4 12 11	6 24 2	9 6 8	11 18 14					
2 12 S 6	4 24 S 12	7 6 K 3	9 18 K 9	12 0 K 30					

When the difference of longitudes becomes equal to the figure given against the number of Tithi, then the Tithi is completed, *i.e.* it ends at that time and the next Tithi begins. When it is less than the figure given in the table, then subtract it from the given figure. This is called *residue*, which multiplied by 2 and degree considered as hour gives an approximate time after which the Tithi ends.

**Nakshatra and Yoga**—The *Nakshatra* for the moment is to be determined from the longitude of Moon and *Yoga* from the longitude of Moon *plus* Sun utilising the table below. Here also the *Nakshatra* or *Yoga* is completed when the longitude or sum of longitudes becomes equal to the figure given against the name of the *Nakshatra* or *Yoga* concerned. When it is less, then find the residue as in the case of tithi calculation, and multiply the same by 2 to get an approximate time of ending of the phenomena.

Long.	Nakshatra	Yoga	Long.	Nakshatra	Yoga
0 13 20	1 Aavini	1 Viskumbha	6 20 0	15 Svati	15 Vajra
0 26 40	2 Bharani	2 Priti	7 3 20	16 Visakha	16 Siddhi(Asrik)
1 10 0	3 Kritika	3 Ayusman	7 16 40	17 Anuradha	17 Vyatipata
1 23 20	4 Rohini	4 Saubhagya	8 0 0	18 Jyestha	18 Vairyan
2 6 40	5 Mrigasirasas	5 Sobhana	8 13 20	19 Mula	19 Parigraha
2 20 0	6 Ardra	6 Atiganda	8 26 40	20 Purvasad.	20 Siva
3 3 20	7 Punarvasu	7 Sukarma	9 10 0	21 Uttarasad.	21 Siddha
3 16 40	8 Pushya	8 Dhriti	9 23 20	22 Sravana	22 Sadhya
4 0 0	9 Aslesha	9 Sula	10 6 40	23 Dhanistha	23 Subha
4 13 20	10 Magha	10 Ganda	10 20 0	24 Satabhisaj	24 Sukla(Sukra)
4 26 40	11 P. Phalguni	11 Vriddhi	11 3 20	25 P. Bhadra.	25 Brahma
5 10 0	12 U. Phalguni	12 Dhruva	11 16 40	26 U. Bhadra.	26 Iodra
5 23 20	13 Hasta	13 Vyaghata	12 0 0	27 Revati	27 Vaidhriti
6 6 40	14 Chitra	14 Harshana			

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### CALCULATION OF TIME

For exact calculation of ending time of the phenomena the daily motion ( $=m$ ) of the function is to be utilised, and for obtaining a precise value of the timing interpolation correction is also to be applied. For this purpose first obtain the value of the function  $T$  ( $=\text{moon}-\text{sun}$ ),  $N$  ( $=\text{moon only}$ ) or  $Y$  ( $=\text{moon}+\text{sun}$ ) as the case may be, for a fixed time say 5-30 A.M. of the previous day, of the day in question, for the following day and the next following day. From these four positions find the daily motion of the function for the previous day ( $=l$ ), for the day in question ( $=m$ ) and for the following day ( $=n$ ).

Find the residue as mentioned earlier and take it in degrees with two places of decimal (min. of arc divided by 60 gives the decimal of a degree). Take the multiplier from the following table against the daily motion  $m$  of the function. Then find--

Residue  $\times$  Multiplier = Time interval.\*

The decimal portion of time obtained above multiplied by 60 gives the minute after the hour. This time interval added to the initial epoch  $ti$ : 5-30 A.M. gives the ending moment of the function.

Multiplier according to Daily Motion

Min.	10°	11°	12°	13°	14°	15°	16°
0 (0.0)		2.182	2.000	1.846	1.714	1.600	1.500
6 (0.1)		2.162	1.983	1.832	1.702	1.589	1.491
12 (0.2)		2.143	1.967	1.818	1.690	1.579	1.481
18 (0.3)		2.124	1.951	1.805	1.678	1.569	1.472
24 (0.4)		2.105	1.935	1.791	1.667	1.558	1.463
30 (0.5)		2.087	1.920	1.778	1.655	1.548	1.455
36 (0.6)		2.069	1.905	1.765	1.644	1.538	
42 (0.7)	2.243	2.061	1.890	1.752	1.633	1.529	
48 (0.8)	2.222	2.034	1.875	1.739	1.622	1.519	
54 (0.9)	2.202	2.017	1.860	1.727	1.611	1.509	
Subtract for							
1 (0.02)	.003	.003	.003	.002	.002	.002	.002
2 (0.03)	.007	.006	.006	.004	.004	.003	.003
3 (0.05)	.010	.009	.008	.007	.006	.005	.005
4 (0.07)	.014	.012	.010	.009	.008	.007	.006
5 (0.08)	.017	.015	.013	.011	.010	.008	.008
6 (0.10)	.021	.018	.015	.013	.011	.010	.009

### Interpolation

For obtaining a precise value of the timing, take the correction due to 'second differences'. For this purpose calculate the increase of the daily motion after alternate days, i.e. take  $(n-l)$  with  $+ve$  or  $-ve$  sign as the case may be. Against the values of the time-interval already

\* The time can also be calculated utilising the Diurnal Proportional Logarithm given in *Indian Ephemeris* by subtracting from log residue the log daily motion and taking the antilog in time.

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obtained and of  $(n-l)$  take the 'correction in arc' from the following table, and multiply it by the multiplier of the previous calculation taken here with only one place of decimal.

Correction in arc  $\times$  Multiplier = Correction in min. of time.

This is to be applied to the time-interval or the ending moment already obtained according to the sign of  $(n-l)$ .

Correction in Arc due to Second Differences

Time interval	$(n-l)$								Time interval
	8'	16'	24'	32'	40'	48'	56'	64'	
$h$									$h$
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0
0.8	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	23.2
1.6	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0	22.4
2.5	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	21.5
3.5	0.2	0.5	0.7	1.0	1.2	1.5	1.7	2.0	20.5
4.7	0.3	0.6	0.9	1.2	1.6	1.9	2.1	2.5	19.3
6.0	0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.0	18.0
7.8	0.4	0.9	1.3	1.7	2.2	2.6	3.1	3.5	16.2
12.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	12.0

## Example—Calculation of Tithi for Jan. 26, 1972

For 5-30 A.M. on Jan. 25 Jan. 26 Jan. 27 Jan. 28

Moon ... 1 1 42 1 15 44 1 29 38 2 13 21  
 Sun ... 9 10 39 9 11 40 9 12 41 9 13 41

$T = \text{Moon} - \text{Sun} \quad 3 \ 21 \ 3 \quad 4 \ 4 \ 4 \quad 4 \ 16 \ 57 \quad 4 \ 29 \ 40$

Daily motion  $l = 13^\circ 01' \quad m = 12^\circ 53' \quad n = 12^\circ 43'$

On 26th  $T = 4s \ 4^\circ \ 4' \therefore$  Tithi = S 11

Residue of this tithi =  $4s \ 12^\circ \ 0' - 4s \ 4^\circ \ 4' = 7^\circ \ 56' = 7.93$

Daily motion  $m = 12^\circ 53' (\therefore \text{Multiplier from table on pre-page} = 1.863)$  and  $n-l = -18'$

$\therefore \text{Time-interval} = 7.93 \times 1.863 = 14.77h = 14h \ 46.2m$

$\therefore \text{Ending moment of S 11} = 5-30 + 14.462 = 20h \ 16.2m \text{ I.S.T.}$

From interpolation : Corr. in arc =  $-1.0 \therefore \text{Corr. in time} = -1.0 \times 1.9 = -1.9m$ .

$\therefore \text{Final time} = 20h \ 16.2m - 1.9m = 20h \ 14.3m \text{ I.S.T. ( N.A. 20-14.2 )}$

The ending moment of Nakshatra and Yoga can also be calculated in a similar way.

## APPENDIX

### The Calendar

The English Calendar or the so called Christian Calendar is the original Roman Calendar as standardised by Julius Cæsar in 46 B.C. and subsequently reformed by Pope Gregory XIII in 1582 A.D. In the calendar introduced by Julius Cæsar ( known as Julian Calendar ) all the years including the century years which are divisible by 4 are leap-years having 29 days in February. This gives the length of the year as 365·25 days which is in excess of the correct length (365·2422) by '0078 days, and this error continued to accumulate with lapse of time necessitating a revision of the calendar. As a result Pope Gregory XIII in 1582 revised the calendar by omitting the accumulated portion, which had amounted to 10 days by that time, from the month of October ( Oct. 5 to Oct. 14 ) ordaining that Thursday Oct. 4 was to be followed by Friday Oct. 15 of that year. The leap-year rule was also revised making the century years 1700, 1800, 1900 and then 2100, 2200, etc. as non-leap or common years with 28 days for February, and 1600, 2000, 2400, etc., which are divisible by 400 as leap-years with February having 29 days. In this way the average year-length of the calendar was brought down to 365·2425 days, the residuary excess being only one day in 3300 years. This revised calendar is known as the Gregorian Calendar, and all scientific and historical records from Oct. 15, 1582 onwards are now expressed or maintained in terms of this calendar and those of all earlier periods by the Julian Calendar.\*

The Gregorian reformation was at once adopted by the Catholic states of Europe, but other countries took longer time to accept it, the latest date of adoption being 1927 for Turkey. In Great Britain it was officially introduced as late as in 1752 by taking away the error, which had amounted to 11 days by that time, from the month of September ( Sept. 3 to Sept. 13 ) and making Wednesday Sept. 2 followed by Thursday Sept. 14, 1752. The Julian Calendar that was used up to Sept. 2 of this year was designated as O.S. ( old style calendar ) and the Gregorian Calendar used from Sept. 14 as N.S. ( new style calendar ). The British people in India also followed this practice in recording historical events and dating of their documents during this period.

The calendar used for planetary positions, transit times, etc. given in this book is as usual the Gregorian Calendar. This calendar maintains a constant difference of 13 days with the Julian Calendar during the period from March 1, 1900 to Feb. 28, 2100 A.D. The calendar of this period may be taken as the **Standard Calendar**, and if necessary may be extended both ways to other centuries also for the facility of

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\*In this Calendar there is no such year as 0 A.D. or 0 B.C., the year that precedes 1 A.D. having been termed as 1 B.C. In astronomical reckoning, however, 1 B.C. is taken as 0 A.D. ( a leap-year ), 2 B.C. as - 1 A.D., 3 B.C. as - 2 A.D., 4 B.C. as - 3 A.D., 5 B.C. as - 4 A.D. ( a leap-year ) and so on.

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application of different periodic variations without any difficulty. In the Standard Calendar all century years are leap-years having 29 days for February and as such there are 100 leap-year days in 4 centuries as in the Julian Calendar, while there are 97 such days in the Gregorian Calendar.

The dates arrived at in other centuries by application of the motion for 100 years etc. are the dates of the above Standard Calendar, from which the corresponding dates of the Gregorian or the Julian Calendar that was current at that time may be obtained by the corrections given below.

From a given date of the Gregorian Calendar or the old style calendar ( the Julian ) the corresponding date of the Standard Calendar may also be obtained by inverse application of these corrections.

From a date of Standard Calendar		To the corresponding date of Gregorian Calendar (or N.S.)		Julian Calend.
All earlier years to	Oct. 17, 1582	—	—	—
Oct. 18, 1582 to	Mar. 2, 1700*	— 3 days (Oct. 15, 1582 to Feb. 28, 1700)	—	-13 d.
Mar. 3, 1700 "	" 1, 1800*	- 2 days (Mar. 1, 1700 " " 28, 1800)	"	-13 "
" 2, 1800 "	Feb. 29, 1900*	- 1 day (Mar. 1, 1800 " " 28, 1900)	"	-13 "
" 1, 1900 "	" 28, 2100*	0 (Mar. 1, 1900 " " 28, 2100)	"	-13 "
Feb. 29, 2100 "	" 27, 2200*	+ 1 day (Mar. 1, 2100 " " 28, 2200)	"	-13 "
" 28, 2200 "	" 26, 2300*	+ 2 days (Mar. 1, 2200 " " 28, 2300)	"	-13 "
" 27, 2300 "	" 25, 2500*	+ 3 days (Mar. 1, 2300 " " 28, 2500)	"	-13 "

\* In these century years February has 29 days in the Standard Calendar and 28 days in the Gregorian Calendar.

### Construction of the Tables and their use in other Centuries

The planetary positions and other elements given for the period 1951 to 2050 A.D. may be utilised in determining the positions for other centuries also. In this case the elements will be obtained for dates of the Standard Calendar ; these dates may then be converted into the corresponding dates of the Gregorian or the Julian Calendar as the case may be.

**Weekday**—The weekdays recur regularly after a period of 28 years in the Standard Calendar. Some multiples of this period are 84, 112, 196, 224, 280, 308, 392, 420, 476, 504, etc. By addition or subtraction of a suitable multiple to and from the given year ( the given date being first reduced to the date of the Standard Calendar ) a similar year in the period 1951 to 2050 is obtained, the weekdays of which are the same as those of the given year.

**Ayanamsa**—The ayanamsa is based on the Chitrā-paksha and its value is the same as used in the *Indian Ephemeris and Nautical Almanac*, and is less by 5''·8 than that adopted in *LAHIRI'S Tables of the Sun*.



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**Longitude of Sun**—The *Nirayana* longitude of mean Sun is corrected by the equation of centre for the year and is affected by aberration ( $-20''\cdot5$ ), but it does not take into account the long period term (about  $-6''\cdot6$ ), lunar inequality ( $\pm 6''\cdot4$ ), planetary perturbations ( $\pm 20''$ ) and reduction from E.T. to U.T. (about  $+2''$ ). The apparent *nirayana* longitude of the Sun so obtained has been termed as True Sun.

The variations of the longitude of Sun for different periods as applicable to the figures for any year given in this book are stated below. For earlier years the variations are to be applied inversely, i.e. with a positive sign and the True Sun thus obtained would be for the zero-date of the Standard Calendar of that year.

V A R I A T I O N S   I N							
	4 years	100 yrs.	200 yrs.	300 yrs.	400 yrs.	500 yrs.	
Jan. 0	-1'58'	-40'	-1° 19'	-1° 59'	-2° 38'	-3° 18'	
Feb. 0	-1'58	-39	-1 19	-1 58	-2 38	-3 17	
Mar. 0	-1'56	-39	-1 18	-1 57	-2 36	-3 15	
Apr. 0	-1'52	-38	-1 16	-1 54	-2 32	-3 10	
May 0	-1'48	-37	-1 14	-1 51	-2 28	-3 05	
June 0	-1'45	-36	-1 12	-1 49	-2 25	-3 01	
July 0	-1'43	-36	-1 12	-1 47	-2 23	-2 59	
Aug. 0	-1'43	-36	-1 12	-1 47	-2 23	-2 59	
Sept. 0	-1'45	-36	-1 13	-1 49	-2 25	-3 02	
Oct. 0	-1'49	-37	-1 14	-1 52	-2 29	-3 06	
Nov. 0	-1'53	-38	-1 16	-1 55	-2 33	-3 11	
Dec. 0	-1'56	-39	-1 18	-1 57	-2 36	-3 15	

**Moon**—In deriving the *nirayana* mean longitude of Moon a constant correction of  $+20''\cdot0$  for reduction from E.T. to U.T. has been applied, but corrections on this account in Anomaly and Tithi have been ignored.

The variations of Mean Moon and of the two arguments are given below for certain periods, by the application of which the corresponding figures for other epochs may be obtained as in the case of the Sun.

Motion in	Mean Moon		Moon's Anomaly	Tithi	Rahu	
1 day	0s 13'	10'581	1'089	1'0159	- 0s	0'05
365 days	4 9	22'247	7'393	10'8019	- 0	19'34
4 years	5 20	39'567	0'663	14'2237	- 2	17'42
100 years	10 6 29		16'57	25'593	- 4	15'5
200 "	8 12 59		3'14	21'186	- 9	1'1
300 "	6 19 28		19'71	16'779	- 1	16'6
400 "	4 25 57		6'28	12'371	- 6	2'1
500 "	3 2 26		22'85	7'964	- 10	17'7

For earlier years the figures for centuries are as usual to be subtracted from those of the adopted year remembering that the period of Anomaly and Tithi is 30.

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For finding the longitude of True Moon from the value of Mean Moon, the following arguments are necessary for determining the values of different corrections.

$A$  = Mean Anomaly of Moon ;  $T$  = Mean Tithi ;

$g$  = Sun's mean anomaly ;  $F$  = Mean Moon - Rahu.

Of these the values of  $A$  and  $T$  are given in the book in units of 12 degrees,  $F$  can be obtained by subtraction, and the value of  $g$  is  $0^\circ$  on Jan 3,  $90^\circ$  on April 4,  $180^\circ$  on July 1,  $270^\circ$  on Oct. 4 and  $360^\circ$  on Dec. 31. Then—

$$\begin{aligned} \text{True Moon} = & \text{Mean Moon} + 377'3 \sin A + 12'8 \sin 2A + 0'6 \sin 3A \\ & \text{(Tab. I—Equation of centre)} \\ & + 76'4 \sin (2T - A) + 0'5 \sin (4T - 2A) \text{ (Tab. III—Evection)} \\ & - 2'1 \sin T + 39'5 \sin 2T + 0'2 \sin 4T \text{ (Tab. II—Variation)} \\ & - 11'1 \sin g - 0'1 \sin 2g \text{ (Tab. IV—Annual Equation)} \\ & - 6'9 \sin 2T \text{ (Tab. V—Reduction)} \end{aligned}$$

For the purpose of simplification of work, smaller terms have not been taken into account. To help the inquisitive readers a few of such terms are given below :—

$$\begin{aligned} & + 3'5 \sin (2T - 2A) + 3'4 \sin (2T - A - g) + 3'2 \sin (2T + A) \\ & + 2'8 \sin (2T - g) + 2'5 \sin (A - g) - 1'8 \sin (A + g) \end{aligned}$$

**Mercury and Venus**—The 'Days from conjunction' given for the inferior planets are measured from the last mean superior conjunction of the planet with the sun. The mean daily motion of 'Planet minus Sun' is  $3^\circ 10'673$  for Mercury and  $0^\circ 61'652$  for Venus giving their synodic periods as 115'8775 and 583'9214 days respectively. The days from conj. multiplied by the above relative motions give the mean planet minus mean sun for the day which is known as Sighra Kendra or mean Sighra anomaly in Hindu Astronomy.

The variations of the argument 'Days from Conjunction' are given below for certain periods as in the case of the moon. While subtracting the century variations from the figures for the adopted year to get those for the corresponding dates (of Standard Calendar) of earlier centuries, it may in some cases be necessary first to add the period of the planet to the figure to facilitate subtraction.

	Mercury d	Venus d
Period of the planet	115'88	583'92
Increase of the argument in —		
4 years	70'47	293'16
100 "	23'6	321'9
200 "	47'2	59'8
300 "	70'8	331'7
400 "	94'4	119'7
500 "	2'1	441'5

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For the calculation of the geocentric longitude of Mercury there is given a detailed method as well as a short method. In both the methods there is use of the English dates which are usable only for the present century being determined on the basis of the nirayana longitude of the Sun. While using these tables in other centuries the dates given in the book should be revised in the following way so that the tables may be used with the new dates taking them for the Standard Calendar of the year in question.

For yrs.	1414-1572	1573-1730	1731-1888	2046-2204
Corr. to date	-3 days	-2 days	-1 day	+1 day

The different items included in the tables for Mercury are detailed below for information of the interested readers.

$a$  = Mean Sun - perihelion of the planet in units of  $3^{\circ}1067$ .

$A_1$  = Equation of centre of Sun with the sign reversed expressed in the same unit.

$B_1 = \log 10 R$  ( of Sun ) - '992.7

$A_0$  = Mean planet - Mean Sun.

$A_0 + a$  = Mean anomaly of the planet.

$A_2$  = Equation of centre of Mercury including

Reduction to the ecliptic expressed in the same unit.

$B_2 = '992.7 - \log 10 r$  ( of Mercury as reduced to ecliptic ).

$A = A_0 + A_1 + A_2$  is the heliocentric true longitude of Mercury *minus* true Sun i.e., true Sighra anomaly.

$B = B_1 + B_2 = \log R - \log r$

In the short method table the date starts from June 8 in case of Mercury when the True Sun passes through perihelion of the planet. For Venus however it starts from Jan. 1, when the mean Sun is nearly equal to the solar perigee. The detailed method tables have not been given in case of Venus.

**Superior Planets**—The longitude of superior planets and of Rahu in other centuries may be obtained from those given for the years 1951 to 2050 by application of the respective periods. For this purpose first convert the given date into the corresponding date of the Standard Calendar where necessary. Then take a suitable period from the following table and apply the same to this date (*add* or *subtract* as necessary) in order to arrive at a date within the span of the tables.

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The longitude of the planet for this latter date as obtained from the Ephemeris and corrected by *inverse* application of the degree-correction given in the table below is the required longitude of the planet for the date in question.

### Periods of Planets

( The degree-correction is the increase of the nirayana longitude  
after the given period )

Mars		Jupiter		Saturn		Herschel		Rahu	
yr.	deg.	yr.	deg.	yr.	deg.	yr.	deg.	yr.	deg.
79	+0.8	83	-1.0	59	+1.1	84	-0.1	93	-0.0
158	+1.7	166	-2.0	118	+2.1	168	-0.2	136	-0.1
205	-2.3	178	+2.1	177	+3.2	252	-0.3	279	-0.1
284	-1.5	261	+1.1	206	-2.3	336	-0.4	372	-0.2
363	-0.7	344	+0.1	265	-1.2	420	-0.5	465	-0.2
442	+0.1	427	-0.9	324	-0.1	504	-0.6	558	-0.3
521	+0.9	510	-1.9	383	+1.0				
				442	+2.1				
				501	+3.0				

For Neptune : 82 yr.	+180°·2,	165 yr.	+0°·5,	247 yr.	+180°·7
330 yr.	+1°·0,	412 yr.	+181°·2,	494 yr.	+0°·3

As regards *Pluto*, the period of sidereal revolution of the planet is 248·4 years after which the nirayana longitude recurs. The sub-periods do not however give correct result in this case.

### Example

*Find the longitudes of planets for 1486 A.D. Feb. 18, 17-30 I.S.T.*

( Birth of H. H. Sri Chaitanya at Nabadwip )

Saka 1407, Phalguni Purnima evening.

A lunar eclipse started shortly after His birth.

Apparently the above date is of the Julian Calendar, from which the Standard Calendar date is obtained as March 3 (by addition of 13 days), 1486 A.D.

*Ayanamsa and Weekday*—The value of Chitra-paksha ayanamsa for 1486 is obtained from p. 52 as  $16^{\circ}41'$ . For weekday we add 504 to the given year and get 1990 A.D., a similar year for weekdays, from which the weekday for the given date, i. e., Mar. 3 is obtained as Saturday.

*Sun*—For 1986. Mar. 3, 17-30 I.S.T., the longitude of Sun is  $10^{\circ}18'56''$ . Applying  $+3^{\circ}17'$  as variation for  $-500$  years, the nirayana longitude of Sun for the epoch is obtained as  $10^{\circ}22'13''$  (Sayana longitude is however  $338^{\circ}54'$ ).

# ADVANCE EPHEMERIS

**Moon**—From 1986, Mar. 3, 17-30 I.S.T. (pp. 18, 55-60) arrive at the same date of 1486.

	Mean Moon	Anomaly	Tithi	Rahu
1986, Mar. 0	6 1 23	27°07	18°960	0 9.1
3d	1 9 32	3°27	3°048	(-) 0.2
12h	0 6 35	0°54	0°508	
	7 17 30	0°28	22°516	0 8.9
-300 yrs.	-3 2 26	-22°85	-7°964	+10 17.7
1486, Mar. 3, 17-30	4 15 4	8°03	14°552	10 26.6
Corr. I	+ 6 12			
" II	- 0 8			
" III	- 1 12			
" IV	- 0 9			
" V	+ 0 2			
∴ True Moon	4 19 49			

Moon - Sun = 5s 27°36'.

So tithi is Purnima which is to end about h. 4.48 (2×2.24) after h. 17.30.

This is Phalguni Purnima.

On this day Sun-Rahu i.e.  $K = -4^{\circ}4$  and F.M. = h. 22-12 I.S.T. From pp. 93-94 we get  $m = 1^{\circ}00$ . ∴  $Km = 4^{\circ}4$ . So there is a total lunar eclipse in the evening. Middle of eclipse as obtained from F.M. is h. 22-16 and half duration is 103 min. ∴ Eclipse begins at h. 20-33 I.S.T. (Oppolzer 20-33).

For Mercury and Venus obtain 'Days from Conjunction' (p. 18).

	Mercury	Venus
	d	d
1986, Mar. 3, 17-30	37.5	43.6
-500 years	-2.1	-441.5
1486 same date	35.4	186.0

For calculation of elongation of these planets use along with the above the date as Mar. 3 minus 3 = Mar. 0.

True Sun ...	10 22.2	10 22.2
Elongation ...	+18.2	+43.0
∴ Longitude ...	11 10.4	0 5.2
	(11 10)	(0 5)

For Superior Planets the longitude is to be obtained by using the respective similar years by applying the periods from p. 112.

	Mars	Jupiter	Saturn	Herschel	Rahu
Given year	1486	1486	1486	1486	1486
Corr. for similar year	+521	+510	+501	+504	+465
Similar year	2007	1996	1987	1990	1951
Long. for Mar. 3.5	9s 10°0	8s 18°5	7s 26°7	8s 15°2	10s 28°4
Deg.-corr.	-0.9	+1.9	-3.0	+0.6	+0.2
Longitude	9 9.1	8 20.4	7 23.7	8 15.8	10 28.6
	(9 10)	(8 20)	(7 24)		

# ADVANCE EPHEMERIS

**Transit of Sun**—The dates of transit obtained in other centuries by application of the century variations given in the book are of the Standard Calendar. The time obtained need some further small correction as given below. In the case of Siddhantic calculation, however, no such additional correction is necessary. The given corrections are to be applied inversely for earlier centuries as usual.

Rasi	100 yrs.	500 yrs.	Sign	100 yrs.	500 yrs.
	h	h		h	h
Makara	+0.28	+1.4	Aquarius	+1.35	+6.7
Kumbha	+0.27	+1.3	Pisces	+1.03	+5.1
Mina	+0.20	+1.0	Aries	+0.42	+2.1
Mṛgshira	+0.07	+0.3	Taurus	-0.30	-1.5
Viṣṇu	-0.09	-0.4	Gemini	-0.96	-4.8
Mṛthunna	-0.21	-1.0	Cancer	-1.36	-6.8
Karkata	-0.28	-1.4	Leo	-1.38	-6.9
Śmṛṣa	-0.27	-1.3	Virgo	-1.02	-5.1
Kanya	-0.19	-1.0	Libra	-0.39	-1.9
Tula	-0.06	-0.3	Scorpio	+0.33	+1.6
Vriśchika	+0.08	+0.4	Sagittarius	+0.96	+4.8
Dhanus	+0.21	+1.0	Capricornus	+1.32	+6.6

Calculation of the time of Sun's transit into Kumbha Rasi in 1486.

	Modern Nirayana		S. S. Calculation	
	d	h	d	h
1954 ...	Feb. 12	16.9	Feb. 12	16.8
1983-86 ...		+4.9		+6.7
1986 ...	Feb. 12	21.8	Feb. 12	23.5
-500 yrs. ...	(-) 3	4.4	(-) 4	9.1
Further corr. ...	(-) 1	1.3	(+) 0	0.2
1486 A.D. ...	Feb. 9	16.1 I.S.T.	Feb. 8	14.6 I.S.T.

Hence Feb. 10 (Standard Calendar) of 1486 A.D. is the first day of solar Phalguna (Bengal rule) and March 3 is the 22nd day of Phalguna 1407 Saka. According to S. S. calendar the month begins one day earlier and so March 3 is Phalguna 23.

Calculation of Full Moon of March, 1486 A.D. (Standard Calendar).

	d	h	A
(Pp. 88-89) 1954, ...	Feb. 3	10.9	24.80
1983-86 ...	6	2.7	11.96
For Full Moon ...	14	18.4	16.08
1986 ...	Feb. 24	8.0	22.84
-500 yrs. ...	(+) 7	20.2	+15.68
1486 ...	Mar. 4	4.2	8.52
Corr. for A ...		-9.7	
„ for date ...	(Mar. 1)	+3.5	
∴ F. M. on 1486,	Mar. 3	22.0 I.S.T.	
	(3 22.2)		

The calculations given above pertaining to the birth date of Sri Chaitanya Dev as for March 3 are actually for Feb. 18, 1486 A.D. (Saturday) of the Julian or old style calendar. This date is also Phalguna 23, 1407 Saka (S. S. Calendar).

## ADVANCE EPHEMERIS

### Longitudes of Planets by their Periods

The calculation of the longitudes of superior planets by their periods has been exemplified on page 113. Those for the Moon, Mercury and Venus are shown below.

**Moon**—(1) For Moon first consider the period of 1240 days which gives nearly a constant difference in longitude.

The period of 1240 days = 3 years 4 months and 23 days ( $\pm 1$  day)  
= 3 years and 5 complete lunar months.

The weekday increases by one during the period and tithi remains the same. The longitude of Moon increases by  $4^{\circ} 18' 41''$  after the period.

(2) The period of 4326 days also gives a nearly constant difference in the longitude of Moon.

The period of 4326 days = 12 years less 57 days  
= 11 years 10 months and 4 days ( $\pm 1$  day)

The weekday remains the same after the period but newmoon becomes fullmoon.

The nirayana longitude of Moon increases by  $4^{\circ} 0' 56''$  and the sayana longitude by  $4^{\circ} 1' 6''$  after the period.

**Example**—On Mar. 1, 1968 Friday, the nirayana longitude of Moon is  $11^{\circ} 6' 59''$  at 5-30 a.m. I.S.T. By adding  $4^{\circ} 18' 41''$  for 1240 days, we get the longitude for July 24, 1971 Saturday as  $3^{\circ} 25' 40''$ . Again on Sept. 19, 1959 Saturday Moon is  $11^{\circ} 24' 57''$ . By adding  $4^{\circ} 0' 56''$  for 4326 days we get the longitude for the above date of 1971 as  $3^{\circ} 25' 53''$ . The actual longitude on this date is however  $3^{\circ} 25' 43''$ .

**Mercury**—For this planet the period of 13 years or more correctly 4751 days may be utilised.

The period of 4751 days = 13 years *plus* 2 or 3 days during which the weekday *increases* by 5 or *decreases* by 2.

The longitude of Mercury increases by the following amounts during this period.

Nirayana	1st Jan.	$+2^{\circ} 43'$	1st July	$+2^{\circ} 33'$
Sayana	,,	$+2^{\circ} 54'$	,,	$+2^{\circ} 44'$

*N.B.* In all the above methods the corresponding date found by application of the period to the initial year should be checked up by weekdays of the two epochs to ensure correctness.

# ADVANCED EPHEMERIS

**Venus**—For Venus the period of 8 years *less* 2 days may very conveniently be used. After this period the weekday increases by one and the longitude of Venus by the following amounts :

	Jan. 1	Apr. 1, Oct. 1	July 1
Nirayana	$-2^{\circ} 06'$	$-2^{\circ} 01'$	$-1^{\circ} 57'$
Sayana	$-1^{\circ} 59'$	$-1^{\circ} 55'$	$-1^{\circ} 51'$

When the daily motion of the planet is different from the normal motion of  $59'$ , then the following further correction is necessary.

Motion	$1^{\circ} 15'$	$0^{\circ} 59'$	$0^{\circ} 38'$	$0^{\circ} 15'$	$0^{\circ} 0'$	$(-)\ 0^{\circ} 22'$	$(-)\ 0^{\circ} 38'$
Correction	$+6'$	0	$-8'$	$-17'$	$-23'$	$-32'$	$-38'$

The error in this method is found to be limited to 2 or 3 mins. only in case of the latter planet. For example, the longitude of Venus on May 3, 1961 is  $11^{\circ} 19' 26''$  and the daily motion is  $+0^{\circ} 3'$ . Hence the two corrections are  $-1^{\circ} 59'$  and  $-22'$ , totalling  $-2^{\circ} 21'$ . Applying this correction to the above figure for 1961 we get the longitude for May 1, 1969 as  $11^{\circ} 17' 5''$  ( I.E.  $11^{\circ} 17' 6''$  ).

**FINIS**

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